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Michigan’s quantitative school culture inventories and student achievement

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Michigan's Quantitative School Culture Inventories and Student Achievement

by

Alexander A. McNeese

Dissertation

Submitted to the Department of Leadership and Counseling

Eastern Michigan University

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DOCTOR OF PHILOSOPHY

Education Leadership

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Ypsilanti, Michigan
Dedication

First, it is most important that my wife, daughter, and son know how important they are to me and how important they were on this dissertation journey. They are the center of my world. My family has sacrificed so much for me as I worked through this process. Their love and care have fueled me and continue to push me to try each day to make the world a better place.
Acknowledgments

I extend deep gratitude to my patient and collaborative committee chair, Dr. Ronald Williamson. His questions prompted my interest and centered my focus. His openness during our conversations were more than just an asset for this study; they were motivating and thought-provoking about the person I want to be. I could not imagine a better guide during this process, and I thank him for helping me to develop perceptions about life.

I thank my committee. Dr. James Berry, Dr. Robert Carpenter, and Dr. Jaclynn Tracy. Each helped to hone the dissertation process and provided important expertise at every step. Dr. Berry’s knowledge of organizational culture, Dr. Carpenter’s deep understanding of statistics and effective measures to study the human experience, and Dr. Tracy’s help that sharpened my understanding of why this was important were all appreciated.

I offer deep and sincere appreciation for my most influential mentor, Dr. Anthony Muhammad, who is the reason I wanted to become a school leader and why I grew interested in the study of schools’ organizational culture. He was my principal when I was a young teacher who had begun to grow cynical of the educational structures. Through his example, guidance, and friendship, I have grown and continued to focus on being a part of the solution, building an egalitarian system of education where all students are equipped with the ability to fulfill their purposes and dreams. It has been an honor to work by his side.

Finally, I must thank my father and Fr. Norman Nawrocki, with whom I spent the first 18 years of my life conversing, or more precisely, debating around the dinner table. They shaped the thinking that has given me an ability to rationally and respectfully speak with people, even those with opposing views. They demonstrated the prototype of what it means to be a man, to be educated, to be a father, and to honor lifelong friendships.
Abstract

Schools must help all students achieve. Leaders who understand the elements of culture and their impact on an organization can be very effective. In 2015, as part of a strategy to cultivate healthy school cultures, the State of Michigan deployed a new self-reporting school culture inventory as part of each school's annual reporting. In this quantitative study, correlational and comparative analyses were conducted to examine the relationship between schools’ self-reported school culture inventories (School Systems Review) and student achievement measured by the state’s reading assessment data (MStep). This study analyzed achievement data from students in Grades 3 through 5 during the 2014-2015 (N = 6758) and the 2015-2016 (N = 6947) school years. All schools (N=32) in the study were traditional public school districts located in the state of Michigan’s southeast counties of Macomb, Oakland, and Wayne.

The findings of this study suggested that higher reported levels of school culture on the Michigan’s School System Review (SSR) were significantly correlated to higher levels of student achievement. Further, that higher reported levels of collaborative teams and collective responsibility, indicators of healthy school culture within a school, were significantly correlated to higher levels of academic achievement.

Findings of this study offered evidence that school leaders in Michigan can utilize the SSR to analyze school culture, and moreover, school leaders everywhere should recognize the importance collaborative teams and collective responsibility in developing healthy school cultures.
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Chapter 1: Problem Statement and Design Components

Introduction

The expected outcomes and goals of United States’ public schooling systems have changed over time. Initially, the public education system was responsible for preparing students for the roles our country deemed appropriate and necessary. On April 14, 1647, Massachusetts established the first public school in America for students to learn about the Bible (Karier, 1991). For the next 300 years, education served as a grand social movement to frame life within biblical terms (Tyack & Hansot, 1981).

Another development in education occurred in the late 18th century when Thomas Jefferson, cited by Carpenter (2010), proposed a system of public education by which students could be tracked into “the labored and the learned” (p. 141); the purpose of school, he proposed, was to ensure a system that identified new leaders but also allowed others to grasp essential concepts of citizenry. Dufour and Eaker (1998) suggested that Jefferson’s impact on education continues today, as modern K-12 education continues to be a “system of sorting and selecting students” (p. 23) and that the traditional high school is still structured to produce the “learned and the labored” described by Carpenter (2010, p. 141).

The updated Elementary and Secondary Act, better known as No Child Left Behind (NCLB, 2001), shifted the educational landscape away from the Jeffersonian view. Since enacted, the goal of the law has been for the majority of students to achieve at the highest levels. The law states that all children have a “fair, equal, and significant opportunity to obtain a high quality education” and that students achieve “proficiency on challenging State academic achievement standards” (NCLB, 2001, sec. 1001).
No matter to whom you were born, no matter where you were born, and no matter the current advantages you have at home, the U. S. system of K-12 education is expected to serve the country by equally equipping our children with the math and reading skills needed to work competitively and to qualify for the most intellectually rigorous jobs the international world has to offer (Friedman, 2005; Marzano & Kendall, 1996; Schul, 2011). Muhammad (2015) stated,

No policy embodies the idea of egalitarianism more than the 2002 reauthorization of the ESEA known as No Child Left Behind (NCLB, 2001). NCLB, the signature education policy of President George W. Bush, mandated that all public school students take state-standardized academic assessments annually in both mathematics and reading. The law demanded that each school prepare 100 percent of its student population. (p. 34)

Growing public concern about equality education for every student was addressed in legislation that expanded the role of the federal government into education throughout states and school districts across the country.

**Statement of the Problem**

Today in the United States, school improvement is mandatory, and achievement by all students are goals of the school improvement process (NCLB, 2001). The aims of school improvement process are improved teaching, learning, and student test performance. Schools have been under legislative pressure to increase student performance in math and reading (Stolp, 1994; Nichols, Glass, & Berliner, 2006; Muhammad, 2009; Muhammad, 2015). Student performance is gauged by gains and proficiency levels on standardized tests. Due to the increase in accountability following No Child Left Behind (2001), teaching to the test and
fashionable academic initiatives for obtaining higher test scores have been instituted with
uneven results (Chief Justice Earl Warren Institute, 2007; Le Floch, Taylor, & Thomsen,
2006).

In the search for real academic growth, the cultivation of healthy school cultures has
been identified as a tactic to improve students’ academic results (Deal & Peterson, 1999;
Muhammad, 2009; Sergiovanni, 2000). In 2015, the State of Michigan deployed a new self-
reporting school culture inventory as part of each school's annual reporting (Zdeb, 2015).
Researchers have compiled extensive evidence on school culture’s strong correlation with
increased student achievement (Stolp, 1994). Information provided by Zdeb (2015) suggested
that self-reporting of school-level culture has become an element of the school improvement
process in the state of Michigan.

This quantitative study utilized correlational and comparative analysis to examine the
relationship between schools’ self-reported school culture inventories and student
achievement. The self-reported school culture data were derived from the 2015 and 2016
School Systems Review (SSR), a new annual diagnostic available for all of the state’s public
schools as a part of the school improvement process. Student achievement was defined as
reading scores in Grades 3 to 5 on Michigan’s mandated reading assessment, the M-Step. It
is important to note that the SSR tool is one of two that may be used to complete the
Michigan EdYes Report due each spring. The other possible tool is the Interim Self-
Assessment, which is only available to North Central Association Schools (NCA). Schools or
districts must pay a fee to access the NCA accreditation service. Due to the cost of NCA
affiliation and changes occurring in school improvement initiatives, the future of the
mandated portion of the EdYes report is unknown. At this time, the SSR report is mandatory for all non-NCA-accredited schools and an option for all other Michigan schools.

**Purpose of the Study**

It was the goal of this study to identify whether the State of Michigan’s self-reporting school culture elements in the mandated diagnostic have an impact on student learning. First, the study sought to determine the relationship between student achievement on standardized tests and scores on the self-reporting school culture inventory (see Figure 1). Second, this researcher sought to determine the relationship between culturally-focused indicators and student achievement. Figure 2 shows the indicators pertinent to school culture: E–Learning Environment, N–Safe and supportive environment, O–Shared leadership for learning, S–Collaborative teams, and T–Collective Responsibility. Finally, during a Two-year period, when schools have authentically completed the Systems Review Diagnostic and student achievement increases, positive school culture elements should have also increased (see Figure 3).

![Figure 1](image.png)

*Figure 1.* Conceptual framework for Research Question 1.
Figure 2. Conceptual framework for Research Question 2.

Figure 3. Conceptual framework for Research Question 3.
Conceptual Framework

School improvement efforts have highlighted the importance of a healthy school culture (Fullan, 1993). Cavanaugh and Dellar (1997) stated, “teachers valued school development programmes, which were likely to affect cultural growth rather than those which centered upon the formal requirements of the school organization or of the educational process” (p. 10). The State of Michigan, like many other state governments, has formalized the school improvement process, and elements of cultural analysis have been included in the self-reporting review submitted for analysis. Studying school culture has become a part of all school improvement work in Michigan.

According to Kritek (1986), when teachers accept responsibility for school improvement and create a culture that systematically focuses on improving learning, schools are more successful. In the School Systems Review (SSR), schools are now asked to identify school culture characteristics and evidence that they have successfully implemented within the given indicator. The state has attempted to create a checklist for espoused beliefs and artifacts that would closely connect to the definition of a healthy school culture provided by Peterson (2002). Schools are required to document their work to develop a healthy school culture, possibly prompting both metacognition of and accountability to change school culture.
Research Questions

The following questions guided this research study:

Q1. Do higher self-reported school culture scores on the State of Michigan’s diagnostics correlate with higher overall levels of school achievement on the state’s elementary reading assessment?

H1. There is a significant positive relationship between self-reported school culture scores and the level of school achievement on Michigan’s elementary reading assessment.

Q2. Does any indicator on the School Systems Review correlate with overall levels of school achievement on the state’s elementary reading assessment?

H2. There is a relationship between indicators on the School Systems Review and school achievement on the state’s elementary reading assessment.

Q3. Are higher levels of academic achievement in reading related to the variance of self-reported school culture assessment scores?

H3. There is a relationship between higher levels of academic achievement in reading and the Two-year variance of self-reported school culture scores.

Significance of the Study

Muhammad (2009) affirmed that reform initiatives attempt to change the nature of the work adults do in schools, and culture has an impact on school reform initiatives (Deal & Peterson, 2009; Muhammad, 2009). Reform initiatives attempt to change the culture of the American public school system that has developed over hundreds of years and, according to Lortie (1975), that may be the most challenging aspect of modern school reform.

Technical changes alone will not help to accomplish the new educational goals. Fullan (1998) opined that school cultures foster successful improvement of teaching and
learning. Newmann et al. (2006), cited in Deal and Peterson (2009), stated that school restructuring, hitting the reset button on governance, time, and grouping, was not enough without a new professional culture. Peterson’s (2002) concept of transforming to a healthy school culture could assist in the implementation of technical changes that may improve teaching and raise student achievement; however, changing the culture of any organization and adopting a new problem-solving mechanism is notoriously difficult (Molineux, 2013). Thus, it would be a valuable asset to understand school culture and have a tool to assist in developing healthy school culture attributes.

This may be why Michigan includes a school culture inventory as part of the school improvement process. The School Improvement Framework includes multiple annual reports and inventories for every public school to complete. These reports are more than just plans or narratives; they are driven by questions that are self-assessed and ask educators to reflect on topics that focus on school culture (Michigan Department of Education [MDE], 2014). The information brings a new focus to school culture that is part of a system of online data that schools use to drive decisions. The activity for Michigan’s school improvement is documented and regulated online through the AdvancED system, commonly used in many states (Zdeb, 2015). Failure to complete the required reports leads to loss of funding.

Schools may use the results of this study to better understand their own cultures, the tools they use to evaluate school culture, and the value of collective inquiry into school culture. The current research could, therefore, impact the development of school improvement plans across the state that focus on school culture, which may result in healthier school cultures and accelerate growth in student achievement within each school.
District offices could also leverage information relative to their school sites to provide additional, tailored training to leadership and staff about the importance of school culture. Overall, scores may communicate the level of healthy school culture among schools in a particular district and help central office officials allocate resources to various buildings. The research may also lead to further study of specific cultural successes and shortcomings within a district. Additionally, a district’s view of their school indicators would allow for the development of strategic plans to address both school and district needs.

Finally, policy-makers and department of education officials could use the outcomes of this study to determine state-level goals and needed support for districts and schools. They could also use the data to revise or reevaluate the diagnostic. The outcome of this study is a noteworthy topic for Michigan’s educators at school improvement conferences and in other communications. The findings of this study may influence future research and revisions of the School Systems Review and the School Improvement Framework 2.0 (MDE, n. d.).

Researching school culture’s impact on achievement is relevant, especially in a time when many other changes have challenged the status quo of the traditional functioning of our organization. Goals of No Child Left Behind (2001) equate success with high achievement for all students (Chief Justice Earl Warren Institute, 2007; Le Floch, Taylor, & Thomsen, 2006; Depowski, 2008; Gensler, 2006; Rotherham, 2012), opposing the Jeffersonian or traditional structure of education.

No Child Left Behind has not yet met its goal in any state (Rebell & Wolff, 2008). In a time when all students are expected to learn at high levels, many different teaching tools and programs have been developed and implemented to enhance learning in the classroom, but these developments have seen mixed success (Dee, Jacob, & Schwartz, 2013). Promising
work in one school will be a failure in another (Goldman & Tindal, 1998). This may be a key observation, because the literature tells us that nearly all technical changes that are unsupported by organizational cultural change will fail (Deal & Peterson, 2009; Muhammad, 2009).

The data used in this study was gathered directly from the existing information system with the assumption that a healthy school culture helps initiatives of all types succeed, and that the SSR indicators were related to healthy school culture elements. This study identified a relationship between school culture and achievement; therefore, schools, central office staff, and policy-makers can use this research to gain important understandings and improve their schools.

**Definitions and Acronyms**

*AdvancED*—a nonprofit organization created from the merger of the North Central Association Commission on Accreditation and School Improvement, the Southern Association of Colleges and Schools on Accreditation and School Improvement, and, later in 2011, Northwest Accreditation Commission. AdvancED is currently used by more than 32,000 schools in the United States and 70 other countries.

*ASSIST*—the online database and reporting system wherein Michigan school improvement activities are maintained. It is a tool within the AdvancED website.

*Diagnostic*—tools designed to help schools and districts self-assess strengths and areas in need of improvement related to organizational effectiveness, performance, and stakeholder perceptions to support ongoing improvement processes and practice.

*EdYes*—Michigan schools are required to submit an *EdYES!* Report. The required Education YES! school report in ASSIST is called the School Systems Review
(SSR). There are four variations of the EdYES! report—each school is assigned the appropriate report in the ASSIST platform of AdvancED. For MDE-accredited schools the School Systems Review (SSR) is assigned. For NCA-accredited buildings, either the Self-Assessment or the Interim SA is required.

**Inventory**—a research tool used to gather perception data from stakeholders.

**Proficiency**—a level assigned to each student who takes Michigan’s assessment. Students are grouped into four levels based on their scaled score on the assessment: Advanced (Level 1), Proficient (Level 2), Partially Proficient (Level 3), and Not Proficient (Level 4).

**M-Step**—the State of Michigan’s assessment for students in Grades 3-8 and 11. Subject tests vary by grade level, but for the purposes of this study, reading is assessed in Grades 3-5 as part of the English language arts portion of the assessment.

**NCA**—the North Central Association of Colleges and Schools (NCA), also known as the North Central Association. The primary and secondary education accreditation functions of the association have been merged into AdvancED.

**School Data Analysis**—a portion of the ASSIST platform, completed yearly by Michigan public schools, that contain a school culture inventory.

**School Improvement Framework 2.0**—an extensive list of strands, standards, and indicators for schools to use as part of their yearly evaluation on the AdvancED ASSIST platform.

**SSR**— School Systems Review (SSR), a new annual diagnostic available for all of the state’s public schools as a part of the school improvement process.
Limitations

Limitations are defined as circumstances beyond the control of the study, including the choice of a quantitative design that determines the kind of data gathered and the appropriate statistical methods. In this study, the first Two years of the State of Michigan reading assessment data generated by a new assessment tool were analyzed. Comparison of year-one and year-two data may have been limited by several factors, including the incomplete or growing understanding of the new assessment by students and school staff and difficulty of implementing the new assessment.

The M-Step is a computer assessment that allowed some schools to gain a waiver and use pencil and paper version of the assessment due to the lack of technology in the school district. Scores between schools using pencil and paper versus schools using computer assessment may have a wide variance based on the mode of testing. Further, although this study looked at only the first Two years of the assessment, it could be expected that students will be able to perform better on the assessment in subsequent tests.

The Michigan Department of Education has made many changes to the school culture inventory; the School Improvement Framework was recently redeployed and the questions regarding a building’s culture are new to the self-reported inventory. The first year of any implementation may pose some difficulties to collecting data. In this study, it was impossible to know whether the inventory was conducted in a collaborative way with building staff or done by a small group or individual. Many times, state reports are completed solely by the building leader. This makes the fidelity of the SRR self-reporting elements of School Culture diagnostic difficult to determine. This issue was addressed in this document in the Implications and Recommendations section of Chapter 5. Furthermore, the SSR’s scale of 1
to 4 complicates the differentiation of scores and creates an artificial ceiling for reported scores when producing a mean.

Due to the sample size of schools in this study, the findings were indicative of the population of southeastern Michigan’s tri-county area but possibly not representative of the entire public school population in the state of Michigan. Additionally, the sample size may have impacted the outcomes of the study, especially in the 2016 year, where significance was not found.

**Delimitations**

Boundaries established by the researcher narrow the scope and provide a detailed description of the study. This study is limited to reading assessment data generated by a new assessment tool in the first Two years of implementation. The target population included State of Michigan students in Grades 3 through 5 during the 2014-2015 and the 2015-2016 school years ($N = 6947$). Student data were gathered from a random sample of traditional public school districts schools in Macomb, Oakland, and Wayne counties ($N = 32$), with the exception of school districts with financial oversight.

These limitations exclude analysis of similar data gathered in other counties in the state of Michigan, other states, or school culture data gathered by other tools or methods. In addition to the consistent indicators related to school culture among all Michigan schools, variables of school culture linked to the nature of communities and schools, access to technology, and district policy offer possibilities of widely divergent findings in other settings. Thus, the delimitations in this study serve as opportunities to develop recommendations for future research and strengthen the body of knowledge on school culture as it pertains to student achievement.
Organization of the Study

Chapter 1 included introduction and focus of the study, problem statement, purpose, the conceptual framework, research questions, significance of the study, definitions, and limitations. A review of the literature concerning culture, leadership related to school culture, and various inventories employed in the measurement of school culture is discussed in Chapter 2. Chapter 3 focuses on the design of the study, underlying assumptions, and details of the population, data gathering, methods, and analysis of the data. Presentation and analysis of the data comprise Chapter 4. Conclusions, implications and recommendations of the findings, and recommendations for further studies compose Chapter 5 of the dissertation.
Chapter 2: Review of the Literature

Introduction

The key elements necessary for the reader to understand the concept of culture are presented in this chapter, along with discussion about how the concept of culture is manifested in a school environment. The chapter concludes with a description of Michigan’s School Improvement Framework of the elements of school culture and other inventories that have been designed for that purpose.

Culture

Culture is a difficult concept to describe. Corbett (1987) said that culture defines the way things are. Schoen and Teddlie (2008) concurred that, by nature, culture is ambiguous, intangible, and difficult to observe. Bolman and Deal (2008) opined that culture is the frame in which all humans view and make sense of the “chaotic, ambiguous world in which we live” (p. 248). Hofstede (1984) added that culture is a “collective programming of the mind that distinguishes the members of one human group from another” (p. 21). Although, it may be difficult to observe, every organization or group has a culture, which can be fragmented into a spectrum of behavior (Deal & Kennedy, 2000).

Schein’s (2010) Organizational Culture and Leadership offered the most comprehensive academic definition of culture—a group or organization’s shared basic assumptions, espoused values, and artifacts. Each element of culture is interdependent and impacts group members, both existing and new, in overt and covert ways. Muhammad (2009) said that culture exists in the formal and informal communication and thinking of an organization, and Schein (2010) suggested that culture is inherently connected to how an organization solves its problems.
Thompson (2010) added that organizations or groups exist to help deal with problems, given a limited environment and technology. As time passes, organizations develop standardized ways of viewing the world and communicating (Thompson, 2010). Therefore, according to Schein (2010), culture is both a dynamic phenomenon to promote survival and a cohesive background structure based on the solutions of the past. Culture manifests itself on three distinct but symbiotic levels: basic underlying assumptions, espoused values, and artifacts (see Figure 4).

Figure 4. The levels of culture. (Schein, 2010)

The concept that groups of people work out ways of solving issues and arrive at shared understandings about how to solve problems was discussed by Shrivastava (1985) and Fyans and Maehr (1990) and confirmed by Schein (2010), who added that cultures are rooted in these patterns of shared basic assumptions. Deal and Kennedy (2000) discussed the power of an organization's basic underlying assumption in their review of the work of Marvin Bower, an American business theorist and management consultant, who described the informal cultural elements of a business as “the way we do things around here” (p. 4). This is
the most difficult level of culture to observe or identify because it is unwritten and manifested in the informal communication and actions of the people within an organization.

Johnston (1987) stated that every organization has institutionalized values that control the behavior of the people within that organization. Further, Denison and Spreitzer, (1991) said that espoused values are often at the root of organizational systems and structures. Kabanoff and Daly (2002) added that the gamut of values exists in all cultures, but the emphasis an organization or group puts on specific values sets them apart. Schein (2010) concurred that espoused values include the ideas, goals, values, aspirations, ideologies, and rationalizations of an organization.

Finally, according to Schein (2010), all cultures have artifacts, physical representations or behaviors of the organizational culture. Artifacts are observable but often difficult for an outsider to decipher. Tierney (2006) added that they have a great impact on the organization, and that members of the organization both shape and are shaped by artifacts.

**Socialization.** Because organizations are composed of people and because people by their nature are temporary, new members are always entering the group. All cultures will socialize the new individual entering the organization (Tierney, 2006). Molineux (2012), referring to work of Sastry (1997), stated that “socialization process in the organization causes the culture to reinforce itself and thus become relatively stable over time, and so builds inertia” (p.1593). Schein (2010) stated, “The socialization process then begins to reflect what has worked in the past, not what may be the primary agenda of the current leadership of today” (p. 258). In other words, behavior within an organization becomes the
norm, at least until new leadership or environmental upheaval creates a change in the environment of the organization.

New members to a group are initially impacted by the routine (Schein, 2010). The routines are the artifacts of the organization. Because culture is a symbiotic phenomenon, new members of the culture will also begin impacting the espoused values. Bolman and Deal (2008) said that new members, “may work, but never only on their official assignments. They also express personal and social needs that often diverge from formal rules and requirements” (p. 166). Finally, the basic underlying assumptions are learned by newcomers to the organization. Schein (2010) explained how this happens, “It is not necessary for newcomers to attend special training or indoctrination sessions to learn important cultural assumptions. They become quite evident through the daily behavior of the leaders” (p. 250). By observing behavior that is acceptable and rewarded by the leadership, new members are able to follow the leaders’ example and become part of the organization.

**Leadership.** Leadership is essential to an organization's culture. Thompson (1967) stated that organizations exist to solve problems. According to Schein (2010), culture is created and formed through the solutions to those problems. Those solutions were generated by a group working together. Among that group, an individual shared their ideas, their assumptions, to solve the problem. If these assumptions work to solve the problem, they can become the basic underlying assumptions of the group, the basis of culture. That individual, whose assumptions were used, could be categorized as the leader. Schein (2010) noted, “When we are influential in shaping the behavior and values of others, we think of that as ‘leadership’ and are creating the conditions for new culture formation” (p. 3). Change is effective when new ideas find acceptance within the group.
Deal and Peterson (2009) were cited from the first edition of *Organizational Culture and Leadership* by Schein (1985) who said, “The only thing of real importance that leaders do is to create and manage culture and that the unique talent of leaders is their ability to work with culture.” (p. 11). A leader’s ability to understand what motivates individuals is important. In a later edition, Schein (2010) related culture to leadership by stating, “What we end up calling a culture in such systems is usually the result of the embedding of what a founder or leader has imposed on a group that has worked out” (p. 4). A valuable asset of leadership is the ability to accomplish goals with the talent and ability of the group.

Schein (2010) acknowledged that leaders and their actions are also impacted by the culture of an organization:

Culture and leadership are two sides of the same coin in that leaders first start the process of culture creation when they create groups and organizations. After cultures exist, they determine the criteria for leadership and thus determine who will or will not be a leader. But if elements of a culture become dysfunctional, it is the unique function of leadership to perceive the functional and dysfunctional elements of the existing culture and to manage cultural evolution and change in such a way that the group can survive in a changing environment. (p 22)

An important responsibility of a leader is to be able to be cognizant of opportunities for developing leaders and conscious of subtle shifts in group behavior or dynamics that signal the need for change.

Bolman and Deal (2008) opined that leaders who understand the elements of culture and their impact on an organization can be very effective. Hofstede (1984) said that when a leader does not understand culture and assumes that which worked in a previous culture or
environment will work in any instance, it can have disastrous results. Schein (2010) added that when the problems in an organization change, leaders have the job of changing culture on all levels, which is time-consuming and anxiety-provoking but essential to an organization’s survival.

**Leadership and School Culture**

Waters, Marzano, and McNulty (2003) pointed out that the K-12 education system is an organization with a distinct culture. Schein (2010) noted that school leaders and their practices make a difference in academic outcomes, and leaders shape the behavior and values of the people within their organizations. The ability to understand culture and develop improvement plans to influence cultural change within school is an asset to a school leader whose goal is increased student performance.

In early discussions related to organization and culture, Sergiovanni (1993) stated that current organizational theory models were not adequate when describing school culture, and that schools, as a macroculture, are distinct. Denison and Spreitzer (1991) also said that school culture, “connects the strategic, political, interpersonal, and institutional aspects of organizational life by organizing the different patterns of shared values, assumptions, and interpretations” (p. 3). In other words, school culture reflects the various influences of the community in which the school exists. Stolp and Smith (1995) said that school culture includes norms, values, beliefs, ceremonies, rituals, traditions, and myths of a school, and those elements impact the ways people think and act. Sergiovanni (1993) believed that schools needed to be viewed as communities which rely on, “norms, purposes, values, professional socialization, collegiality, and natural independence” (p. 7). The community within the school may be seen as an agency of social change.
Cherubini (2009) pointed to the work of Williams (2003) and Tomlinson (2004) who opined that the school microculture is distinct in each school, and new teachers’ socialization is greatly impacted by the culture of a school. Deal and Peterson (2009) advised that leadership must work with all of the elements of the school culture when attempting to change student outcomes, because those changes do not take place when changes such as the school improvement plan are not supported by the norms, values, and beliefs of staff.

Sergiovanni (1993) highlighted professional socialization. Muhammad (2009) noted that this is a distinct quality of school culture, as nearly all individuals who become teachers bring 13 years of their own K-12 experience, during which they observed the culture of schools, and developed strong prototypes of behavioral norms, values, policy, and procedures.

In 1975, Lortie completed an ethnography of school life in the American K-12 public school system for his book, *Schoolteacher*. Lortie found that the American public school system had a distinct and unique culture, and that it would be the most difficult culture to change due to the indoctrination that all participants have been socialized in their field from the age of 5. Lortie (1975) labeled this phenomenon—the *apprenticeship of observation*.

**Apprenticeship of Observation.** Schempp (1987) explained that the apprenticeship of observation theory described teachers’ thoughts about their profession and predicted teachers’ behavior and attitudes toward changes their field. According to Lortie (1975), the theory stated that educators had been socialized in their field since the time they were students. Teachers adopted the norms of behavior from the student perspective. As students, they had a view of the educational *frontstage* but generally lacked the understanding of a teacher’s responsibility *backstage* (Borg, 2004, p. 274); they witnessed the roles of the
teachers, principals, janitors, secretaries, and so on, but never contemplated the additional roles and responsibilities of the adults in the school.

Lortie (1975) found that the average educator was a good student but did not generally find school exceptionally challenging. Tomlinson (1999) explained that it is rational to expect a person to seek work in an environment where they have already experienced a significant amount of success. This also led new teachers to come to the field with a set of default options for teaching, such as using a traditional didactic classroom structure, and these default options quickly became their main strategies when struggles occurred (p. 535). Until teachers acquire a variety of experiences, performance in the classroom may be limited to strategies observed in the work of others or repetition of personal encounters as a student. Lortie (1975) noted that educators who found success in the system subconsciously implement practices to protect the system, including arbitrary rules and codes for students that have nothing to do with learning but everything to do with preserving a system where compliance is the greatest attribute. This system protecting behavior is all done under the guise of altruism to protect the system that has proven itself in each educator’s own life. The mantra in teachers’ practice is often: “If it worked for me, it will work for you.” Coupling the labored and learned Jeffersonian philosophies and Lortie’s (1975) apprenticeship of observation, it is logical to assume that schools will experience conflict when adopting new practices that focus on learning for all students.

Hess (2010) pointed out that to bring the entire district into the discussion, superintendents generally follow the same career path as teachers and experience a similar indoctrination into education. Approximately 80% of superintendents were once teachers or principals, meaning socialization into the school’s macroculture occurs for 4 of 5 district
leaders. According to Hargreaves and Shirley (2009), the impact of Lortie’s (1975) research relates to the expectation of the educational status quo and the fact that we have an “enormous impediment to improvement (residing) not in contextual factors, but rather in the very core of teachers’ own self-understanding of their work and its real meaning as a professional practice” (p. 2506). Kaplan and Owings (2000) stated it clearly:

Unless teachers and administrators act intentionally to re-boot the culture of their school, all innovations, collegiality, shared decision making, high standards, and high-stakes tests will have to fit in and around existing cultural elements. Although any type of change presented to schools often meets resistance, implementing new approaches without considering school culture will remain no more than crepe and tinsel, incapable of making much of a difference. (p. 2)

The authors’ affirmed the importance of the ability of the school staff and administration to have a common understanding of the elements of the school culture to be able to effectively overcome resistance to change.

It is impossible to overlook leadership’s impact on a school’s culture. Renchler (1992) stated that a school leader has the capacity, with the assistance of other members of the school community, to modify and create new cultural values. Schein (2010) also found that the beliefs, values, and assumptions of the organization’s leader shaped an organization’s culture.

Fullan (2001) believed school culture was the key to success, and that understanding the current school culture research could help leaders work with culture more effectively. Michigan’s new school culture diagnostic tool, the School Systems Review [SSR], a component of the school improvement process (Michigan Department of Education [MDE],
2014), provides leaders with a framework of school culture elements; this diagnostic is explained later in this chapter and explained in depth in Chapter 3. Williamson and Blackburn (2009) stated, “Principals need to understand the power of these [school culture] symbols to telegraph messages about what is important” (p. 9). The SSR helps principals identify cultural elements within their schools. The current study examined the relationship between school culture elements on the SSR (MDE, 2014) and student achievement. Connections found between the SSR and student achievement help school personnel focus on the diagnostic indicators and the process of cultural collective inquiry which may increase student achievement.

**School Improvement.** School improvement plans are a mandatory responsibility for school principals and leadership teams (No Child Left Behind Act [NCLB], 2002). The school improvement process exists to help schools structure helpful actions to solve problems. Concerning school improvement, Sergiovanni (2000) stated, “We still have to worry about standards, the curriculum, teacher development, tests, resources, and the creation of appropriate management designs that help get things done, but these concerns will not matter much unless the right culture is in place” (p. 1). If members of the group do not have a common understanding about the accepted behavior, group goals will not be achieved.

Cherubini (2009) cited the work of Bryk and Driscoll (1988), Daley (2002), and Kardos et al. (2001) and stated that school culture is the “distinctive blend of norms, values, and accepted modes of professional practice, both formal and informal, that prevails among colleagues” (p. 83). School improvement plans should then be a reflection of a school’s culture and formal artifacts of that culture, because this plan is generated by the individuals within a school.
Deal and Peterson (2009) said that from the day the professional culture of a school impacts all of the staff; school culture creates a set of unwritten rules that determine behavior. Araoz, Fleming, and Joslin-Gould (2012) confirmed that superintendents, principals, and teachers are the leaders of the school improvement process, and that these individuals have likely been indoctrinated into a school culture that perpetuates Jeffersonian philosophies.

Problems continue to develop and evolve, so change in the problem-solving system of an organization is always necessary. In a 2012 keynote presentation, DuFour (2012), former educator, author, and speaker, shared a funny but pointed observation that all systems are perfectly aligned for their outcomes. DuFour quoted Albert Einstein by saying, “We cannot solve our problems with the same level of thinking that created them” (n. p.). Solving the problems of higher levels of student learning and achievement is only possible when schools adjust practices that incorporate Jeffersonian thinking.

Porter (1986), Wilson and Goldenberg (1998), and Silverthorn (2006) agreed that schools seem reluctant to change. Although it runs contrary to the goal of all students achieving academic success (NCLB, 2002), the Jeffersonian labored and learned view still prevails. Muhammad (2009), during a school culture interview with a teacher, encountered this basic assumption: “It is impossible for every kid to excel in school. Some of them are cut out for school, and some just are not” (p. 67). It is likely that a majority of teachers, if publicly asked, would disagree with that statement, but each year when student achievement goals are not met, there is not an outcry of disapproval from the teaching community. When change and growth are the keys to increasing student performance, school leaders must develop change initiatives to seek different outcomes.
According to Muhammad (2009), institutional changes within an organization can be framed in two ways: technical or cultural. Technical changes are changes in structures or tools that allow us to solve problems. Cultural change is much different. Cultural change deals with the behavior of the people within the organization. Technical changes are akin to elements in a traditional school improvement plan. Having the teachers implement the plan with fidelity and adjust behavior or norms to solve the organization's problems is a cultural change.

Muhammad (2009) said that both types of change are important, but many organizations focus on the technical. Burke (2001) noted that technical change unsupported by cultural change is usually unsuccessful. Cavanaugh and Dellar (1997) stated that, furthermore, mandating systematic technical change tends to affect changes in the school culture that are inconsistent with the policy’s intent. Elmore (2000) added that theories or technical changes brought into a school are molded by the culture of a school to the point of being unrecognizable in the classroom. Essentially, culture shapes all technical change in an individual school building.

According to Peterson (2002), school culture that shapes or inhibits change can be described as either healthy or toxic. Peterson defined a healthy school culture as a place where adults are student-learning-focused and adopt practices, procedures, and policies that help students learn and achieve the goal of universal student achievement. In a healthy school culture, the mission of the adults matches the expressed mission of the organization, and the rituals, symbols, behaviors, and underlying assumptions are all focused on student learning (Peterson, 2002).
Peterson (2002) continued, that the label of toxic school culture was given to schools that adopted practices and procedures that denied the claim that all students can and would learn. Toxic schools demonstrate social Darwinism in everything from the common language to the school code. This is clearly connected to the Jeffersonian concept of modern education and a possible byproduct of the indoctrination of the school’s adults.

**Evidences and indicators of healthy school culture.** The characteristics associated with Peterson’s (2002) healthy school culture are embedded in the indicators of the Michigan’s SSR, the self-reported inventory, by which schools review indicators, participate in collective inquiry regarding these cultural elements, and assign levels of implementation. Levels are given scores and reported to the state, district office, and schools. The scores quantify school culture and were designed to be used for school improvement.

Schein’s (2010) levels of culture are also reflected in Michigan’s SSR, the diagnostic section of EdYes!, part of the school improvement system. This tool is the inventory that schools may complete that generates the data used by the State of Michigan to evaluate culture.

The evidences are related to the artifacts: visible structures, processes, espoused values, and even documents (MDE, 2014). The characteristics, along with the concepts of underlying assumptions and artifacts, are highlighted in the evidence for each indicator on the SSR (MDE, 2014). Muhammad (2009) explained that an example of traditional public education’s Jeffersonian artifacts would be, “our master schedules, staffing allocations, academic policies, and support systems… built on this cognitive separation of students” (p. 25). Stephens (2010) offered an example of espoused values, the autonomous ideologies that
drive grading practices. The grade a student receives in class can vary dramatically based on how the teacher accounts for, “effort, daily work, and behavior” (p. 1).

This research did not use the evidence portions of the SSR (MDE, 2014), as many of the evidences seemed to be both broad in nature and repetitive. For example, the use of *meeting notes* was identified as evidence 12 times throughout the entire set of evidences and sometimes identified as evidence twice within the same indicator (MDE, 2014). Furthermore, the evidences are in list form, lack a directly communicated connection to any characteristic, and have no numerical significance to the scored outcome for each indicator. Additional research could investigate the number and frequency of specific types of evidence and evidence’s relationship to student achievement, but only the indicators were used in this study.

**Quantifying School Culture**

Denison and Spreitzer (1991) pointed to disagreement within the scientific community about the proper way to study culture. Studying culture in a school, beyond a theoretical framework, has proven to be a challenge. Maxwell and Thomas (1991) proposed that culture is manifested through the behavior of individuals and the group as a whole, and internal evaluations of culture can be exceedingly difficult because of the impact culture has on all elements of the organization. We accept the behaviors we see each day as normal.

Schein (2010) suggested that outside researchers who investigate culture should take a qualitative, ethnographic approach to capture such observations and offered further advice to those who study culture. Ideally, researchers first visit and observe the new culture. The artifacts and processes of the organization should be reviewed, and any puzzling examples should be noted and used in questions to members of that organization. Researchers should
look for inconsistencies, and insiders need to be asked why things are done the current way. Through interviews, researchers should identify the espoused beliefs and ask how those were initially implemented. Finally, researchers should use all of their observations and identify deeper assumptions that drive the behavior observed (Schein, 2010).

However, Denison and Spreitzer (1991) stated that qualitative approaches “are often criticized because they examine the characteristics of the social system that are of interest to the researcher” (p. 7). Even though the concept of culture is well-established, there are many disagreements over how culture should be studied. In a time when governments are pushing schools to be both critical of their cultures and effective with their resources, alternative methods of studying culture are being employed.

Methods to quantify culture using inventories have been developed as an alternative to the lengthy, subjective, and expensive qualitative system of studying culture. Anderman (1991) found that faster, self-reported culture assessments have potential issues. School culture inventory outcomes have been found to have a high correlation to the staff’s feelings of accomplishment, recognition, and affiliation; therefore, a school that has always been successful may report school culture inventory scores that actually gauge feelings about past success rather than the school’s ethos. Additionally, correlations between questions showed how interconnected responders’ perceptions were. Quantitative studies have also highlighted various instances where tested items correlated strongly with other test items, leaving the outcomes of such inventories with strong but perhaps inaccurate outcomes (Anderman, 1991).

Generally, inventories do not produce a gray area of culture but rather a binary outcome of positive or negative culture. Denison and Spreitzer (1991) proposed that the field
lacks valid instrumentation to measure culture; Ouchi and Wilkins (1985) and other researchers have labeled quantitative methods as “superficial, simple-minded, and cheap” (p. 478). The pursuit of quick, effective, and objective measurements for school culture will continue, and researchers have claimed to have found effective ways to use self-reported culture inventories. In a review of contemporary school culture inventory methods, Maslowski (2006) suggested that researchers use multiple tools and triangulate their data with qualitative methods of research. Due primarily to cost, qualitative cultural analysis for every school in a state is an impossibility.

*The State of Michigan’s School Improvement Framework.* The basis of this framework is the new Michigan 2.0, approved on March 11, 2014. This new framework was based on research and developed by Michigan educators (MDE, n. d.). Michigan’s self-reporting tool is located and completed online as part of the AdvancED (n. d.), “a non-profit, non-partisan organization that conducts rigorous, on-site external reviews of PreK-12 schools and school systems to ensure that all learners realize their full potential” (para. 1). The self-reporting questions on school culture are located in a section of the School Systems Review (SSR) diagnostic that schools must complete annually in March. Once completed, the results are scaled into a 5-point scale with one decimal. The entire report is submitted to the state and is warehoused at the state level.

The SSR report is organized into four strands to 10 standards to 26 indicators (see Figure 5). This study focused on schools’ self-reported responses to five indicators based on their use of the term *culture* within the indicator itself and their relationship to the cultural theory and concept discussed earlier. When responding on the report, schools are asked to assign a label to their level of implementation of the indicators: beginning, partial, full, or
sustained. Then, for each of these indicators, schools identify characteristics and evidence that support their self-assessments. The characteristics and evidence are checkboxes and only offer pre-determined options. Only the evidence section allows for an *other* category where schools can define their own evidence.

![School Improvement Framework 2.0](image)

*Figure 5. Michigan’s School Improvement Framework 2.0.*

The self-reported data from each school in the study dictated the school’s self-scaled implementation level, an identification of four to five characteristics, and an identification of evidence for each of the five school culture indicators. A detailed explanation of each indicator is found in Chapter 3. This study sought to determine the relationship between these data and student achievement on the State’s Reading M-Step test.

**Other School Culture Inventories**

Akin to the State of Michigan efforts to quantify the culture of a school, many diagnostics have been used to study school culture. Even though the State of Michigan has chosen to develop their own tool, other diagnostics were identified as part of this research.
The literature review revealed instruments used to quantify some elements of school culture including the following: Instructional Climate Inventory: Form T (ICI-T), School Cultural Elements Questionnaire (SCEQ), School Characteristics Inventory (SCI), and Organizational Climate Description Questionnaire (OCDQ).

The Instructional Climate Inventory: Form T (ICI-T) consists of 37 multiple choice questions, and requires 10 minutes to compete. Five responses across a spectrum from strongly disagree to strongly agree are possible for each question. Other studies reviewed for this research cited Form S and listed its properties as 20 questions requiring more than 5 to 10 minutes to complete using the same scaled response. According to Krug (1990), the Instructional Climate Inventory tests the following areas: mission, curriculum, supervision of teachers, instruction, staff cohesiveness, school resources, and involved communities.

The School Cultural Elements Questionnaire (SCEQ) was developed by Cavanaugh and Dellar in 1996. The tool “comprised eight scales with 32 positive form items, 32 negative form items, five point Liken response scale and an easy scoring key” (p. 4). The questions focus on six elements of school culture: transformational leadership, teacher efficacy, emphasis on learning, collegiality, collaboration, and shared planning.

The School Characteristics Inventory (SCI) is another quantitative research measure to derive quantitative data from schools about change and culture. The tool is based on Sternberg’s (2000) theory of contextual modifiability. The inventory attempts to determine how willing a teacher is to implement instructional practices and assessments that are modified for student needs. Sternberg theorized that for a school to be more successful though the change process, it must be modifiable first. The inventory attempts to quantify this modifiability.
Organizational Climate Description Questionnaire (OCDQ) developed in 1963 by Halphin and Croft was an early tool used to assess teachers’ perceptions regarding teacher behavior and principal behavior. It scales a climate between open and closed. Thiec (1995) explained that the latest revisions have been adapted into separate inventories: OCDQ-RE and OCDQ-RS. The OCDQ-RE is for elementary teachers to assess students’ behaviors, and the OCDQ-RS is a version for secondary classrooms.

Consistent with the format of the tool that the State of Michigan has designed for schools, all of the tools reviewed asked respondents to give a scale response to the questions that relate to a cultural element: artifacts, espoused values, and assumptions. Each tool tests and scales the perceptions of the responders.

Summary

Literature related to organizational and school culture was discussed in this chapter, including concepts related to the impact of school leadership and change. Expensive qualitative studies attempting to understand various elements of school culture have encouraged development of quantitative methods to identify and relate indicators of school culture to school improvement and student achievement. Chapter 3 continues with the assumptions underlying this study and details of the methods employed to link the school culture elements of the State of Michigan’s self-completed inventories and student achievement.
Chapter 3: Methods

Introduction

This chapter includes the design of this study and the methods used to the link the school culture elements of the State of Michigan’s self-completed inventories and student achievement and growth. Topics in this chapter include the problem statement, the process used to determine population participation, instrumentation used by the State of Michigan to gather reading achievement data (M-Step), the mandated school culture self-reporting diagnostic tool from AdvancED (School Systems Review), the proposed research questions, and data analysis methods.

The Design of the Study

In 2015, the State of Michigan deployed a new self-reporting school culture inventory as part of each school's annual reporting (Zdeb, 2015). A quantitative approach was chosen for this correlational study to examine the relationship between schools’ self-reported school culture inventories and student achievement. The self-reported school culture data were gathered from the 2015 and 2016 School Systems Review, a new annual diagnostic report required for all of the state’s public schools. Student achievement was measured by reading scores on Michigan’s mandated reading assessment, the M-Step, in elementary Grades 3–5.

**Underlying assumptions of this study included the following:**

(a) Cultural inventories adopted by Michigan as the source of cultural data were grounded in research.

(b) The self-administered inventories were completed by employees of individual Michigan schools.
(c) The randomly sampled school culture data solicited from and given by schools was accurate.
(d) Michigan’s M-Step assessment provided accurate data on student achievement and student growth over a two year period, 2015–2016.
(e) Michigan’s M-Step assessment is just one measure of a student’s learning.

**Population of Participants in This Study**

Approval was received from the University Human Subjects Review Committee to conduct this study in the State of Michigan (see Appendix). Students in Grades 3 through 5 in traditional public school districts during the 2014–2015 and the 2015–2016 school years were the targeted population for this study ($N = 6947$). Student achievement data were gathered from a random sample of schools in the three Michigan counties: Macomb, Oakland, and Wayne ($N = 32$). Schools that were in districts with financial oversight from the state were excluded from the sample, which eliminated the possibility of using samples from the Detroit Public Schools system. The specific tri-county geographic region was chosen by the researcher for convenience of access to the data sources and familiarity with the demographic characteristics of the geographic area.

**Instrumentation**

**Student achievement data.** Reading scores from the English language arts portion of Michigan’s M-Step assessment for students in Grades 3 through 5 were the source of data measuring student achievement in this study. Reading scores have been shown to significantly correlate with achievement in science and social studies (Churchwell, 2009) and math assessments (Demps & Onwuegbuzie, 2001). The M-Step was introduced in Michigan in the spring of 2015 and administered again in the spring of 2016. In 2015, the M-Step
reading test was part of the English language arts testing battery and included a listening test and performance writing task. In 2016, the test was slightly modified by reducing the performance task, except in fourth grade. Only the reading test portion’s scores were used to determine achievement in this study. Schools are required to have over 95% of their student population take the test, and students who miss a section due to absence are re-tested. This ensures that data from each school were representative of nearly all students.

The content of the questions on the M-Step varies; the Michigan Department of Education provides sample questions. Students are given a short passage to read, then asked questions about that passage. The answer format varies from multiple choice to short answer (see Figures 6 and 7).
A Few New Neighbors
by Kerry McGee

One afternoon, Jessie spotted a tiny bird fluttering around Mrs. Baxter’s front door. Mrs. Baxter had just moved into an apartment. It’s probably looking for somebody to fill the bird feeders, Jessie thought.

The bird perched on the edge of the wreath. Then it disappeared.

Disappeared? Jessie ran over to Mrs. Baxter’s door. Where had it gone?

A jumble of sticks and grass stuck out from the middle of the wreath. Suddenly, Jessie understood. A nest! A bird’s nest sat right in the middle of Mrs. Baxter’s wreath. The bird poked its head out and looked at Jessie. Then it fluttered away.

Jessie crept up to the front door. Tucked inside the nest were four speckled blue eggs.

Jessie ran home to call Mrs. Baxter. *Guess who moved into the house beside Mrs. Baxter, Jessie said.

This question has two parts. First, answer part A. Then, answer part B.

Part A
Which sentence best describes the lesson of the passage?

1. Animals should be protected.
2. Birds should only nest in trees.
3. Movers should listen to children.
4. Children should stay away from birds.

Figure 6. 2015 Sample M-Step reading multiple choice questions. Adapted from https://wbte.drcedirect.com/MI/#login.
Students in schools across Michigan completed the M-Step in a traditional pencil and paper format or in an online testing environment. Each school chose its testing format based on self-determined technology readiness. Released M-Step scores made no mention of whether either testing format, paper or online had a statistical advantage on the assessment. Therefore, for this study, all scores were considered to be comparable.

This study used scores from both 2015 and 2016. Test scores from the first year of testing were released to districts in December 2015. Scores for the spring 2016 assessment were released to districts in September 2016. Test scores are communicated to districts in both scaled scores and proficiency levels.
**School Systems Review.** Self-reported school culture data were gathered from the School Systems Review, a report completed each spring as part of the Ed Yes Report. The diagnostic included questions for each of the School Improvement Framework items. Only items related to school culture were analyzed in this study.

The School Systems Review was organized into four strands, 10 standards, and 26 indicators, and items associated with healthy school culture can be found within multiple strands (see Figure 8).

**Figure 8.** Michigan’s School Improvement Framework 2.0.

Each strand of the School Systems Review includes multiple standards. Each standard encompasses multiple indicators. All of the strands, standards, and indicators are shown in Table 1.
<table>
<thead>
<tr>
<th>Strand</th>
<th>Standard</th>
<th>Indicator</th>
</tr>
</thead>
</table>
| **Strand I: Teaching for Learning** | **Standard 1: Curriculum** | Indicator A: Alignment  
| | | Indicator B: Coherence  
| | **Standard 2: Instruction** | Indicator C: Instructional Design  
| | | Indicator D: Effective Instructional Practices  
| * | **Indicator E: Learning Environment** | Indicator F: Reflection  
| | | Indicator G: Assessment System  
| | **Standard 3: Assessment** | Indicator H: Shared Understanding  
| | | Indicator I: Data Analysis and Decision-Making  
| | | Indicator J: Student Involvement in the Assessment Process  
| **Strand II: Leadership for Learning** | **Standard 4: Instructional Leadership** | Indicator K: A Vision for Learning  
| | | Indicator L: Guidance and Support for Teaching and Learning  
| | | Indicator M: Results-Focused  
| | **Standard 5: A Culture for Learning** | *Indicator N: Safe and Supportive Environment*  
| | | *Indicator O: Shared Leadership for Learning*  
| | **Standard 6: Organizational Management** | Indicator P: Communication Systems  
| | | Indicator Q: Intentional Practices  
| | | Indicator R: Resource Allocation  
| **Strand III: Professional Learning Culture** | **Standard 7: Professional Learning Culture** | *Indicator S: Collaborative Teams*  
| | | *Indicator T: Collective Responsibility*  
| | **Standard 8: Professional Learning System** | Indicator U: Purposeful Planning  
| | | Indicator V: Impact of Professional Learning  
| **Strand IV: School, Family, and Community Relations** | **Standard 9: Communication** | Indicator W: Approaches and Tools  
| | | Indicator X: Cultural Responsiveness  
| | **Standard 10: Engagement** | Indicator Y: Learning Opportunities  
| | | Indicator Z: Partnerships  

*Indicators related to the concept of school culture.*
Items related to school culture were identified by searching the document for the term *culture*. Indicators were flagged for this study if the term culture appeared in any of the descriptions or evidence for that indicator. In all but one instance, the indicator’s language clearly fit the definition of culture from an organizational theory or school culture standpoint. The exception was in Standard 6, Indicator P: “School leaders implement communication systems that address diversity in language and culture” (MDE, 2014, p. 7). In this case, culture was used to refer to students of diverse backgrounds compared to the majority community within a school’s population. Cultural responsiveness, focusing on culture in terms of nationality or ethnicity and its relationship to pedagogy (Ladson-Billings, 1994), is different from school culture and did not fit within the parameters for this study.

This study focused on schools’ responses to Indicators E, N, O, S, and T. When responding to the School Systems Review, schools were asked to rate the degree to which they have implemented the indicators. The scaled ratings were beginning, partial, full, and sustained. In this study, these labels were coded from 1 (beginning) to 4 (sustained).

**Indicators related to the concept of school culture.**

**Strand I–Teaching for Learning:** Indicator E, Learning Environment, asked respondents to consider identify whether their schools reflect all of the following characteristics:

(a) the school culture is one of high academic expectations for all;

(b) high expectations for students are accompanied by appropriate academic and social-emotional support structures and safe environments that encourage positive risk-taking;
(c) classroom management, use of space, procedures, and scheduling ensure the maximum amount of time for instruction and learning; and

(d) school and classroom behavioral expectations are communicated to staff, students, and families and are enforced consistently to support student success.

Muhammad (2009) noted that Indicator E specifically cites school culture in regard to high expectations for all, a concept consistent with the literature regarding school culture and high expectations. Crevola and Hill (1998) stated, “High expectations (are) a belief in the capacity of all students to make progress, given sufficient time and support” (p. 135). The sufficient time and support to which Crevola and Hill referred are also identified as characteristics of a positive learning environment. Further, DuFour, DuFour, Eaker, and Karhanek (2009) concurred that focusing on time for instruction and learning is consistent with the literature on healthy school cultures and effective schools, and Muhammad (2009) and Renchler (1992) emphasized that clear communication is a critical aspect of school culture.

**Strand II—Leadership for Learning:** Indicators N and O are part of Standard 5—A Culture of Learning, which dictates that “School leaders create a culture that ensures success for all students and staff” (MDE, 2014, p. 7). Indicator N’s characteristics included the following:

(a) school leaders work to intentionally develop relationships that model respect, trust, collaboration, and high expectations for all;

(b) school leaders and staff collaboratively create a safe and supportive learning environment through established safety and behavior expectations for staff and students;
(c) staff models a healthy school climate, including social, emotional, and physical health that is desired for students;

(d) students in crisis, students at risk of dropping out, and others who require intensive assistance are identified and linked to appropriate support in a timely manner; and

(e) positive risk-taking by staff and students to achieve established goals is modeled and supported by school leaders.

Similar to Indicator E, Indicator N focuses on what leadership does as opposed to the esprit of the school. Muhammad (2009) and Renchler (1992) agreed that the intentional work of developing a staff’s trust, collaboration, and expectations is done through clear communication and is a critical aspect of leadership for developing school culture. Schoen and Teddlie (2008) added that Indicator N focuses on what leaders need to do to develop cultures that promote learning for all students and highlights leadership qualities that can impact school culture.

Climate is also addressed in Indicator N where, as noted by Demps and Onwuegbuzie (2001), Kaplan and Owings (2013), and Schoen and Teddlie (2008), the terms climate and culture are used interchangeably. Demps and Onwuegbuzie (2001), Deal and Patterson (2009), and Lee, Chen, and Smerdon (1996) concurred that climate is one of the elements that make up a school’s culture and argued that certain types of leaders shape climate and motivate teachers to create healthy school climates. Lummis (2001) said that, as an element of cultural transformation, creating safe and healthy environments were “part of improving academic performance and developing caring and ethical citizens” (p. VII).
Described by Khourey-Bowers, Dinko, and Hart (2004), Indicator O, shared leadership for learning, emphasizes that shared leadership and collective inquiry have a positive impact on school culture. Indicator O’s identified characteristics include the following:

(a) leadership teams are committed to improving student learning and implementing the mission and goals of the school through on-going inquiry and reflection;
(b) all staff have the opportunity for leadership roles within the school;
(c) potential successors for leadership positions are identified and provided on-going learning opportunities to advance their leadership skills;
(d) school leaders support the development of collegial relationships and high performing teams; and
(e) opportunities are provided for students, family, and community members to develop leadership capacity and assume leadership responsibilities.

Indicator O identifies positive characteristics of a productive school culture where the adults in the school were focused on adjusting practices for student learning. Cavanaugh and Dellar (1997) and Deal and Peterson (2009) explained that collectively sharing commitment and instituting practices intended to improve student learning help to develop positive school culture.

**Strand III—Professional Learning Culture:** Muhammad (2009) noted that a healthy or positive school culture seeks out the knowledge needed to ensure that every student learns. Deal and Peterson (2009) added that teachers who are part of a positive culture also seek to learn and adopt practices that help all students learn. Indicator S includes the following characteristics:
(a) a collaborative culture exists in which instructional staff supports each other through feedback and coaching to implement new learning to increase student achievement;

(b) structures and systems are in place for collaborative planning time for learning teams;

(c) teams utilize protocols and collaboration time effectively, and;

(d) instructional staff collaborates regularly to analyze student data to inform instruction and adjust delivery to better meet student needs.

DuFour, DuFour, Eaker, and Many (2006) agreed that each of these characteristics strongly connects with the concepts of collaboration associated with a professional learning community.

Indicator T involves school staff who bond together to create policies, practices, and procedures and hold themselves mutually accountable for new learning and academic outcomes. Lee and Loeb (2000), Lee and Smith (1996), and Goddard, LoGerfo, and Hoy (2004) agreed that collective responsibility is a school norm, a main element of culture, and is closely connected with student achievement. This indicator encompasses the following elements:

(a) instructional staff teams and individuals take active roles in creating and leading professional learning;

(b) instructional staff hold one another accountable for implementing what is learned from professional learning and;

(c) instructional staff hold one another accountable for the improved student performance that should result from the implementation of professional learning.
Sergiovanni (2007) added that teachers who assume roles of leadership and responsibility for student academic outcomes foster a new culture of shared action.

Data Collection

School culture data were requested from the intermediate school districts (ISDs) of three counties in Southeast Michigan. Seventy-five schools were chosen by random using the Select Cases function in IBM SPSS. Some of the requested schools did not participate in using the SSR; thus, after removing the non-participating schools, an additional random sample of 15 schools was generated for each county. Of the 75 schools selected, 32 were found to use the SSR and had submitted requested data to their ISD in a timely manner. A Freedom of Information Act [FOIA], 1996) application was not requested; all data were given with the understanding that schools in the research would remain anonymous. Student data were collected in late 2016 and early 2017; data files were secured in a Microsoft Excel spreadsheet in the office of the researcher.

Reading scores for all of the schools in the study were gained through mischooldata.com. These data were both free and open to the public. A simple alpha system was used to connect schools’ data, e.g., School A achievement data, School A culture inventory data. Once the number of alphabetic symbols are exhausted, the researcher used double letters in alpha order.

For each individual grade—third, fourth, and fifth—, the data collected included total number of students tested, scaled score, standard deviation of the scaled score, percent advanced and proficient, percent advanced, percent proficient, percent partially proficient, percent not proficient. Four schools, C, K, L, and M, did not have fifth grade in 2015, and the same was true in 2016 with the exception of School M, which seemingly added a fifth grade
in 2016. One school, EE, only reported third grade test scores in both 2015 and 2016. Two of the schools, X and Y, did not have reported MStep scores for any of the tested grades; these were elementary school with configurations that did not include third, fourth, or fifth grades.

Additionally, when gathering all of the scores from the publicly available mischooldata.com, it was found that the state reports the percentage of students in one of its categories, advanced proficient, proficient, minimally proficient, and not proficient; if the score falls under 10 points it is identified as > 10. When three of the other areas were scored and when knowing the final percentage would equal one hundred, this was calculated for the final section. When two of the sections were reported with the > 10 symbol, the two reported sections were added together and the difference between that number and 100 were divided between the two remaining sections. In the data set, this occurred four times, where schools had > 10 in the last two, partially proficient and not proficient, sections. If there was an odd digit in the tenths place, then the additional tenths digit was added to the partially proficient section. This calculation only impacts proficiency rates for Schools D, F, R, and DD and it has no bearing on scaled scores.

**Methods of Data Analysis**

All spreadsheets were imported to the IBM SPSS system for data analysis. Multiple tests were run on the data to search for patterns and significant findings. Achievement data were gathered from three separate grade levels. According to the MDE (2016), the range of scores were different for each grade level—third grade scaled scores were reported between 1,203 and 1357 with a range of 154 points; fourth grade scaled scores were reported between 1,301 and 1,454 with a range of 153; and fifth grade scaled scores were reported between 1,409 and 1,560 with a range of 151.
The scores were recalculated using the following equations by grade: Third Grade: Student Score–1202 = Unified Scaled Score; Fourth Grade: Student Score–1300 = Unified Scaled Score; and Fifth Grade: Student Score–1408 = Unified Scaled Score. Each scaled score was subtracted by one less than the lowest possible score; therefore, all student scaled scores in each grade level unified on a range between 1 and 155. Without this pre-process of organizing data for analysis, scaled scores would have lost meaning when averaged across the three grades. Additionally, according to Allen (2009), without a standardization of scores, “the big number may ‘eat’ the small number” (p. 548).

When using the equations above, all scores from grades third through fifth were standardized into a scaled score allowing for a true school achievement average to be calculated. When calculating a total school culture score for a specific school, response were coded from 1 (beginning) to 4 (sustained). Scores from all of the indicators were averaged to the tenths column. Etzkorn (2011) offered that this process of normalization of a scaled variable was important, because all proportions had to be in a common range.

Looking at data from the years 2015 and 2016 independently, tests using Pearson’s correlations were conducted to identify relationships, if any, between each schools’ self-reported school culture scores and their average scaled scores on the reading assessment. With each individual indicator, the scaled scores were placed into categories by the school’s rating on that indicator, beginning, partial, full, and sustained. A test was conducted to see if any rating within any indicator had a significant relationship to higher levels of student achievement.

This study sought to determine the relationship between Indicators E, N, O, S, and T and scaled levels of student achievement using a one way analysis of covariance (ANCOVA)
to test the relationship between the changing of scores on the school culture inventory while controlling for the change on the state reading assessment. Using two years of self-reported school culture indicators and the variance between those scores and the student test scores on the reading assessment, this study tested to determine if the change in cultural inventory outcomes between year one and year two had any relationship to the level of reading achievement on the state assessment.

A new student growth categorical variable was created. Schools that had positive growth in student achievement scores were separated from schools that experienced a decline in student achievement. None of the schools in the study had overall student achievement scores that were unchanged. Using mischooldata.com, the researcher also collected the following variables from both the 2014–2015 and 2015–2016 school years: percentage female, percentage economically disadvantaged, percentage English language learner, and percentage of students with an individualized education program (IEP). None of these variables were used as part of the study but may be an asset to future research.

**Summary**

This chapter comprised a discussion of the design and methods used in this study to research the possible relationship between the school culture elements of the State of Michigan’s self-completed inventories and student achievement and growth. Topics included underlying assumptions regarding school culture, the participants in the study, instrument used to gather data, a description of and organization of the data, and finally, the procedures employed for analysis of the data. Findings related to the research questions are revealed in Chapter 4, followed by conclusions, implications, and recommendations based on the findings in Chapter 5.
Chapter 4: Findings and Analysis of the Data

Introduction

This study examined the relationship between educational institutions’ self-reported school culture inventories and student achievement. Five indicators, E–Learning Environment; N–Safe and Supportive Environment; O–Shared Leadership for Learning; S–Collaborative Teams; and T–Collective Responsibility, from the State-of-Michigan-developed School Systems Review (SSR) were used to measure school culture. Elementary reading assessment scores on the MStep, annual state assessment, were used as the measure for student achievement. Both the cultural inventories and students’ achievement scores were collected from a random sample of elementary schools from three counties in southeastern Michigan in two school years, 2014–2015 to the 2015–2016.

Purpose of the Study

The goal of this study was to identify whether the State of Michigan’s self-reporting school culture elements in the diagnostic have an impact on student learning. The study sought to determine the relationship between student achievement on standardized tests and scores on the self-reporting school culture inventory. Further, this study examined the relationship between culturally-focused indicators and student achievement.

Findings

School Systems Review (SSR). The SSR was used in this study to measure School Culture. Indicators E, N, O, S, and T are those elements related to School Culture (see Table 1). Data were collected from spring 2015 (30 schools) and spring 2016 (32 schools). Schools that completed the SSR inventories ranked their level of implementation of the indicators—beginning, partial, full, or sustained. For the purpose of this study, those labels have been
assigned the following numeric codes: beginning—1, partial—2, full—3 and sustained—4. Gathered data and a mean school culture score is described from both years for each indicator.

**Indicator E: Learning Environment.** In SPSS, a frequency analysis was used to compare the statistics between reported indicators in 2015 and 2016. Between the two years, the mean score on Indicator E: Learning Environment rose .21, and the standard deviation narrowed .109. The percentage of schools reporting beginning implementation dropped from 16.7% to 6.3%. The percentage of school reporting full implementation rose .5%. The year 2015 was 43.3%, and 2016 was 43.8%. Finally, the percentage of schools that reported sustained implementation rose from 40% in 2015 to 50% in 2016. Table 2 shows the comparison of the frequencies between 2015 and 2016.

Table 2

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Schools</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Reported Partial (2)</td>
<td>16.7%</td>
<td>6.3%</td>
</tr>
<tr>
<td>Reported Full (3)</td>
<td>43.3%</td>
<td>43.8%</td>
</tr>
<tr>
<td>Reported Sustained (4)</td>
<td>40.0%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.23</td>
<td>3.44</td>
</tr>
<tr>
<td>SD</td>
<td>.728</td>
<td>.619</td>
</tr>
</tbody>
</table>

The bar chart of scores for each year is shown in Figures 9 through 18 following each
table. The horizontal axis represents the codes for stages of implementation, 1 to 4, and the vertical axis shows the number of schools reporting in each year. It is important to report that only 30 schools reported in 2015, and 32 schools used the SSR and reported in 2016. In both 2015 and 2016, none of the reporting schools self-identified as beginning implementation. Five schools indicated a partial implementation of a positive learning environment, whereas that number dropped to two reporting schools in 2016. The number of schools reporting at full implementation rose from 13 in 2015 to 14 in 2016. Finally, schools that report sustained implementation rose from 12 schools in 2015 to 16 schools in 2016.

Figure 9. 2015 Bar Chart of Scores for Indicator E: Learning Environment.
Figure 10. 2016 Bar Chart of Scores for Indicator E: Learning Environment.

**Indicator N: Safe and Supportive Environment.** The frequency analysis in SPSS yielded slight differences between the reported indicators in 2015 and 2016. The horizontal axis represents the codes for stages of implementation, 1 to 4, and the vertical axis shows the number of schools reporting in each year. The mean score on Indicator N rose .07 and the standard deviation narrowed .111. The percentage of schools reporting partial implementation dropped from 20.0% to 15.6%. The percentage of school reporting full implementation rose 1.4%. Furthermore, 2015 was 33.3%, and 2016 was 34.4%. Finally, the percentage of school that reported sustained implementation rose from 46.7% in 2015 to 50% in 2016. Table 3 compares the frequencies between 2015 and 2016.
Table 3

*Comparison of Indicator N: Safe and Supportive Environment by Year*

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Reported Partial (2)</td>
<td>20.0%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Reported Full (3)</td>
<td>33.3%</td>
<td>34.4%</td>
</tr>
<tr>
<td>Reported Sustained (4)</td>
<td>46.7%</td>
<td>50.0%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.27</td>
<td>3.34</td>
</tr>
<tr>
<td>SD</td>
<td>.785</td>
<td>.6745</td>
</tr>
</tbody>
</table>

The bar graph of scores for each year is shown in Figures 11 and 12. None of the reporting schools self-identified as beginning implementation, and 30 schools reported in 2015 and 32 reported in 2016. In 2015, six schools indicated a partial implementation of a positive learning environment, whereas that number dropped to five in 2016. In 2015, ten schools reported full implementation of a Safe and Supportive Learning Environment, whereas in 2016, 11 schools full implementation. Schools that report sustained implementation rose from 14 schools in 2015 to 16 schools in 2016.
Figure 11. 2015 Distribution of Scores for Indicator N: Safe and Supportive Environment.

Figure 12. 2016 Distribution of Scores for Indicator N: Safe and Supportive Environment.

**Indicator O: Shared Leadership for Learning.** Indicator O: Shared Leadership for Learning frequency analysis in SPSS showed the mean score on Indicator O rose .06, but, unlike the previous indicators, the standard deviation also rose by .04. The percentage of schools reporting partial implementation dropped from 23.3% to 21.9%, but it is important to mention that the number held steady at seven. The difference in percentage was due to the
higher number of responses in 2016. The percentage of school reporting full implementation, unlike the previous indicators, dropped 2.5%. 2015 was 40.0%, and 2016 was 37.5%, yet again, this was due to higher number of samples in 2016. The number held steady at 12.

Finally, the percentage of school that reported sustained implementation rose from 36.7% in 2015 to 40.6% in 2016. The growth was due to the number of schools reporting sustained implementation moving from 11 in 2015 to 13 in 2016. Table 4 compares the means, standard deviation, and frequencies of scores between 2015 and 2016, and a bar graph of scores can be seen in Figure 13 and Figure 14.

Table 4

Comparison of Indicator O: Shared Leadership for Learning by Year

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Reported Partial (2)</td>
<td>23.3%</td>
<td>21.9%</td>
</tr>
<tr>
<td>Reported Full (3)</td>
<td>40.0%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Reported Sustained (4)</td>
<td>36.7%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.13</td>
<td>3.19</td>
</tr>
<tr>
<td>SD</td>
<td>.776</td>
<td>.780</td>
</tr>
</tbody>
</table>
Figure 13. 2015 Distribution of Scores for Indicator O: Shared Leadership for Learning.

Figure 14. 2016 Distribution of Scores for Indicator O: Shared Leadership for Learning.

**Indicator S: Collaborative Teams.** The frequency analysis for Indicator S:

Collaborative Teams found the mean score on Indicator S rose .25 and the standard deviation narrowed by .025 between 2015 and 2016 reports. Table 5 compares the means, standard deviation, and frequencies of scores between 2015 and 2016. Again, none of the reporting schools self-identified as beginning implementation. Eight schools, or 26.7% of all reporting
institutions indicated a partial implementation of a collaborative team, while that number dropped to five or 15.6% of reporting schools in 2016. The number of schools reporting at full implementation rose from 11 in 2015 to 12 schools in 2016. The percentage of full implementation shrank slightly from 46.7% to 43.8%; although, the number held steady at fourteen and the difference in percentage can be attributed to the increased number of samples in 2016. Finally, schools that report sustained implementation rose from eight schools in 2015 to 13 schools in 2016; a percentage change from 26.7% to 40.6%. The bar graph of scores can be seen in Figure 15 and Figure 16.

Table 5

Comparison of Indicator S: Collaborative Teams by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Reported Partial (2)</td>
<td>26.7%</td>
<td>15.6%</td>
</tr>
<tr>
<td>Reported Full (3)</td>
<td>46.7%</td>
<td>43.8%</td>
</tr>
<tr>
<td>Reported Sustained (4)</td>
<td>26.7%</td>
<td>40.6%</td>
</tr>
<tr>
<td>Mean</td>
<td>3.00</td>
<td>3.25</td>
</tr>
<tr>
<td>SD</td>
<td>.743</td>
<td>.718</td>
</tr>
</tbody>
</table>
Figure 15. 2015 Distribution of Scores for Indicator S: Collaborative Teams.

Figure 16. 2016 Distribution of Scores for Indicator S: Collaborative Teams.

**Indicator T: Collective Responsibility.** The frequency analysis for the final indicator, Collective Responsibility, found the mean score on Indicator T rose .31 and the standard deviation narrowed by .049 between 2015 and 2016 reports. One school or 3.3% of schools in 2015 self-identified as beginning implementation; there were no reported beginning
implementation in 2016. Fifteen schools, or 50% of all reporting institutions indicated a partial implementation of collective responsibility, while that number dropped to 11 or 34.4% of reporting schools in 2016. The number of schools reporting at full implementation rose from eight in 2015 to 12 schools in 2016, a percentage change from 25% to 37%. Finally, schools that report sustained implementation rose from six schools in 2015 to nine schools in 2016, a percentage change from 18.8% to 28.1%. Table 6 compares the means, standard deviation, and frequencies of scores between 2015 and 2016. The bar graph of scores can be seen in Figure 17 and Figure 18.

Table 6

*Comparison of Indicator T: Collective Responsibility by Year*

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Reporting Beginning (1)</td>
<td>3.3%</td>
<td>0%</td>
</tr>
<tr>
<td>Reported Partial (2)</td>
<td>50.0%</td>
<td>34.4%</td>
</tr>
<tr>
<td>Reported Full (3)</td>
<td>26.7%</td>
<td>37.5%</td>
</tr>
<tr>
<td>Reported Sustained (4)</td>
<td>20.0%</td>
<td>28.1%</td>
</tr>
<tr>
<td>Mean</td>
<td>2.63</td>
<td>2.94</td>
</tr>
<tr>
<td>SD</td>
<td>.850</td>
<td>.801</td>
</tr>
</tbody>
</table>
Mean School Culture Scores. Mean School Culture scores were created in SPSS through the compute variable function. To compute the new variable, all of the indicators
were added together and divided by five. This was done for both 2015 and 2016 individually. The frequency analysis for the mean school culture variable found that the mean score increased from 3.05 in 2015 to 3.23 in 2016. The standard deviation rose slightly from .650 to .651. The median of three in 2015 rose to 3.3 in 2016, and the mode was the same at 3.8 for 2015 and 2016. Table 7 compares the statistical scores between 2015 and 2016. The distribution of scores can be seen in Figure 19 and Figure 20.

Table 7

*Comparison of Mean School Culture Inventories by Year*

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>30</td>
<td>32</td>
</tr>
<tr>
<td>Mean</td>
<td>3.0533</td>
<td>3.2313</td>
</tr>
<tr>
<td>Mdn</td>
<td>3.00</td>
<td>3.30</td>
</tr>
<tr>
<td>Mode</td>
<td>3.8</td>
<td>3.8</td>
</tr>
<tr>
<td>SD</td>
<td>.64953</td>
<td>.65077</td>
</tr>
</tbody>
</table>
Figure 19. 2015 Distribution of Scores for Mean School Culture.

Student achievement. Student achievement scores were measured by the MStep reading scores for the third, fourth, and fifth grades in the participant schools in the study. Schools were assigned an alpha code from A to FF for anonymity. Tables 8, 9, and 10 show...
the scaled scores and proficiency levels of the schools in this study for the 2015 and 2016 school years.

To find a mean scaled score for each school, the numbers from each grade had to be manipulated. Without doing so, scaled scores would lose meaning when averaged across the three grades. All scores from Grades 3 through 5 were standardized into a scaled score allowing for the true school achievement average to be calculated. According to Etzkorn (2011), this process of normalization of a scaled variable is important, because all proportions must be in a common range. The unified scaled scores for each grade level are as follows: Third Grade: Student Score–1202 = Unified Scaled Score; Fourth Grade: Student Score–1300 = Unified Scaled Score; Fifth Grade: Student Score–1408 = Unified Scaled Score. Each scaled score is being subtracted by one less than the lowest possible score; therefore, all student scaled scores in each grade level were unified on a range between 1 and 155. The compute variable function in SPSS was used to create both new scaled scores for all grades and, from those new unified scaled scores, create a new mean school scaled score.

In the study, two schools did not have third, fourth, or fifth grade. Those schools are not included in the calculation. Additionally, Schools C, K, L, and M did not have fifth grade in 2015, and the same was true in 2016 with the exception of School M, which gained a fifth grade. One school, EE, only reported third grade test scores in both 2015 and 2016. When computing new variables “Unified Scaled Score School 2015” and “Unified Scaled Score School 2016” SPSS did not include the empty values into the mean.

Third Grade. Between 2015 and 2016, the mean third grade unified scaled score shrunk from 104.12 to 100.47. The standard deviation tightened between the two years, moving from 12.39 to 10.99. The mean proficiency percentage changed from 60.14 in 2015
to 56.46 in 2016. The proficiency mean standard deviation shrank from 20.78 to 17.46 between 2015 and 2016. There are 30 samples for the third grade for both 2015 and 2016 because schools X and Y did not test in third grade. Table 8 shows the 2015 and 2016 comparison of third grade MStep unified scaled scores and proficiency rates.

Table 8

*Comparison of Third Grade MStep Unified Scaled Scores and Proficiency Percentage by Year*

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>Scaled Mean</td>
<td>104.12</td>
<td>100.4733</td>
</tr>
<tr>
<td>Scaled SD</td>
<td>12.39208</td>
<td>10.98485</td>
</tr>
<tr>
<td>Proficiency Mean</td>
<td>60.143</td>
<td>56.46</td>
</tr>
<tr>
<td>Proficiency SD</td>
<td>20.776</td>
<td>17.460</td>
</tr>
</tbody>
</table>

*Fourth grade.* Between 2015 and 2016, the mean fourth grade unified scaled score rose slightly from 102.35 to 102.41. The standard deviation tightened between the two years, moving from 12.36 to 11.14. The mean proficiency percentage changed slightly from 55.2 in 2015 to 55.1 in 2016. Between 2015 and 2016, the proficiency mean standard deviation shrank from 20.13 to 19.29. There were 29 samples for both 2015 and 2016. This is due to Schools X, Y, and EE not having a fourth grade cohort. Table 9 shows the 2015 and 2016 comparison of third grade MStep unified scaled scores and proficiency rates.
Table 9

*Comparison of Fourth Grade MStep Scaled Scores and Proficiency Percentage by Year*

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>Scaled Mean</td>
<td>102.3517</td>
<td>102.4103</td>
</tr>
<tr>
<td>Scaled SD</td>
<td>12.35509</td>
<td>11.13907</td>
</tr>
<tr>
<td>Proficiency Mean</td>
<td>55.183</td>
<td>55.141</td>
</tr>
<tr>
<td>Proficiency SD</td>
<td>20.1306</td>
<td>19.2927</td>
</tr>
</tbody>
</table>

*Fifth Grade.* Between 2015 and 2016, the Mean Fifth Grade Unified Scaled Score shrunk from 99 to 98.4. The standard deviation tightened between the two years, moving from 11.39 to 9.74. The mean proficiency percentage changed from 62.1 in 2015 to 63.2 in 2016. The proficiency mean standard deviation shrunk from 17.86 to 17.15 between 2015 and 2016. In 2015, schools C, K, L, M, X, Y, and EE did not have fifth grade scores. In 2016, schools C, K, L, X, Y, and EE did not have fifth grade. Table 10 shows the 2015 and 2016 comparison of fifth grade MStep unified scaled scores and proficiency rates.
Table 10

Comparison of Fifth Grade MStep Unified Scaled Scores and Proficiency Percentage by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>25</td>
<td>26</td>
</tr>
<tr>
<td>Scaled Mean</td>
<td>99.004</td>
<td>98.3615</td>
</tr>
<tr>
<td>Scaled SD</td>
<td>11.38952</td>
<td>9.74249</td>
</tr>
<tr>
<td>Proficiency Mean</td>
<td>62.076</td>
<td>63.235</td>
</tr>
<tr>
<td>Proficiency SD</td>
<td>17.8608</td>
<td>17.149</td>
</tr>
</tbody>
</table>

Unified Scaled Score. When MStep unified scaled score data from all grades were combined, the following means were revealed. In 2015, the unified scaled mean for all schools and grades in the study was 101.68 with a standard deviation of 11.86. In 2016, the unified scaled mean for all schools and grades in the study was 99.94 with a standard deviation of 10.55. Table 11 compares the 2015 and 2016 unified scaled scores descriptive statistics.

Table 11

Comparison of MStep Unified Scaled Scores by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scaled Mean</td>
<td>101.68</td>
<td>99.943</td>
</tr>
<tr>
<td>Scaled SD</td>
<td>11.85768</td>
<td>10.55391</td>
</tr>
</tbody>
</table>
Demographic descriptive statistics. Tables 12 through 15 show the comparison of each demographic variable of gender, socio-economic level, English language learners, and students with disabilities for the school years 2015 and 2016.

Percent Female. These data represent the percentage of female students in the total participant population. Table 12 shows the number of schools reporting, the minimum and maximum percentage of female students, the mean percentage of females, and the standard deviation.

Table 12

Comparison Between Schools’ Percentages of Female Students by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>32</td>
<td>39.7</td>
<td>52.0</td>
<td>47.83</td>
<td>3.1761</td>
</tr>
<tr>
<td>2016</td>
<td>32</td>
<td>42.2</td>
<td>53.3</td>
<td>48.20</td>
<td>2.8029</td>
</tr>
</tbody>
</table>

Economically Disadvantaged. Each schools’ percentage of economically disadvantaged students was collected for the study. Table 13 shows the number of schools reporting, the minimum and maximum percentage range, the mean percentage of economically disadvantaged students, and the standard deviation.
Table 13

*Comparison Between Schools’ Percentages Economically Disadvantaged by Year*

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>32</td>
<td>1.6</td>
<td>81.5</td>
<td>34.87</td>
<td>25.3979</td>
</tr>
<tr>
<td>2016</td>
<td>32</td>
<td>1.0</td>
<td>81.9</td>
<td>36.45</td>
<td>26.9681</td>
</tr>
</tbody>
</table>

*English language learners.* Each school’s percentage of English language learners was collected for the study. Table 14 shows the number of schools reporting, the minimum and maximum percentage range, the mean percentage of English language learner students, and the standard deviation.

Table 14

*Comparison Between Schools’ Percentages of English Language Learners by Year*

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>32</td>
<td>.0</td>
<td>38.2</td>
<td>8.11</td>
<td>9.7595</td>
</tr>
<tr>
<td>2016</td>
<td>32</td>
<td>.0</td>
<td>47.8</td>
<td>9.33</td>
<td>11.6839</td>
</tr>
</tbody>
</table>

*Students with disabilities.* Each school’s percentage of students with disabilities was collected for the study. Table 15 shows the number of schools reporting, the minimum and maximum percentage range, the mean percentage of students with disabilities, and the standard deviation.
Table 15

Comparison Between Schools’ Percentages of Students with Disabilities by Year

<table>
<thead>
<tr>
<th>Year</th>
<th>N</th>
<th>Minimum</th>
<th>Maximum</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>32</td>
<td>5.4</td>
<td>20.3</td>
<td>11.163</td>
<td>3.4939</td>
</tr>
<tr>
<td>2016</td>
<td>32</td>
<td>5.3</td>
<td>25.3</td>
<td>12.113</td>
<td>4.1916</td>
</tr>
</tbody>
</table>

Analysis of Data by Research Questions

Research Question 1.

Q1. Do higher self-reported school culture scores on the State of Michigan’s diagnostics correlate with higher overall levels of school achievement on the state’s elementary reading assessment?

H1. There is a significant positive relationship between self-reported school culture scores and the level of school achievement on Michigan’s elementary reading assessment. Looking at 2015 and 2016 independently, the researcher used Pearson’s correlations to test for a relationship between all of the educational institutions’ self-reported school culture scores and their average scaled scores on the reading assessment.

For 2015, the correlation score of 0.424 was identified with a significance of 0.024 using and SPSS Pearson Correlation. Figure 21 is the scatter plot of the Pearson Correlation between school’s mean unified scaled score mean on the X axis, and school culture mean score on the Y axis.
Figure 21. 2015 SPSS scatter plot of the Pearson correlation between school’s mean unified scaled score mean, X axis, and school culture mean score, Y axis.

For 2016, the correlation score of 0.333 was identified with a significance of 0.072 using an SPSS Pearson Correlation. Figure 22 is the scatter plot of the Pearson Correlation between school’s mean unified scaled score mean on the X axis, and school culture mean score on the Y axis.
Figure 2. 2016 SPSS scatter plot of the Pearson correlation between school’s mean unified scaled score mean, X axis, and school culture mean score, Y axis.

Analysis of data for research question 1. Do higher self-reported school culture scores on the State of Michigan’s diagnostics correlate with higher overall levels of school achievement on the state’s elementary reading assessment?

During 2015, the unified scaled score and the school culture had correlation of .424 with a significance level of .024. In 2016, the unified scaled score and the school culture had a correlation of .2333 with a significance level of .072. For 2015, findings show a significant positive relationship between self-reported school culture scores and the level of school achievement on Michigan’s elementary reading assessment. The findings of this study accept the hypothesis for Question 1.
**Research Question 2.**

**Q2.** Does any indicator on the School Systems Review correlate with overall levels of school achievement on the state’s elementary reading assessment?

**H2.** There is a relationship between indicators on the School Systems Review and school achievement on the state’s elementary reading assessment.

A one-way ANOVA was used to test the relationship between Indicators E, N, O, S, and T and scaled scores of student achievement. Tested in SPSS, each separate indicator, broken down by responses of beginning (coded 1), partial (coded 2), full (coded 3), and sustained (coded 4) were identified as the independent variable and the student achievement was marked as the dependent variable. A test of homogeneity of variances table is included for each test as well.

For any test that revealed a significance level below .05, a post-hoc test was run to test for variability between variables. Finally, a graph is presented for those indicators that demonstrated a significant difference between variables. Outputs for each indicator in 2015 and 2016 are discussed.

**Indicator E: Learning Environment.** In 2015 and 2016, no schools responded as beginning implementation of a learning environment. For 2015, the mean student achievements on the unified scaled score were 98.96 in the five schools that reported partial implementation category with a standard deviation of 14.42. The mean student achievements on the unified scaled score of 101.17 was reported in the 12 schools that reported full implementation category with a standard deviation of 9.33. The 11 schools that reported sustained implementation showed a mean score of 103.87 with a standard deviation of 13.94.
In 2016, the mean was 86.84 in the two schools that reported partial implementation category with a standard deviation of 4.68. The mean of 101.16 was reported in the 13 schools that reported full implementation category with a standard deviation of 8.80. The 15 schools that reported sustained implementation showed a mean of 100.62 with a standard deviation of 11.68.

Table 16 contains the elements from the ANOVA test from 2015 and 2016 showing number of schools, mean score, and standard deviation for each category of implementation for Indicator E: Learning Environment. Since none of the sampled schools had a beginning implementation response, that column was omitted from the table. None of the Indicator E findings were significant.

Table 16

Findings of the ANOVA for Indicator E: Learning Environment from 2015 and 2016

<table>
<thead>
<tr>
<th>Variable</th>
<th>Partial</th>
<th></th>
<th></th>
<th>Full</th>
<th></th>
<th></th>
<th>Sustained</th>
<th></th>
<th></th>
<th>ANOVA</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td></td>
<td>df</td>
</tr>
<tr>
<td>2015</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>25</td>
</tr>
<tr>
<td>2016</td>
<td>2</td>
<td>86.84</td>
<td>4.68</td>
<td>13</td>
<td>101.16</td>
<td>8.8</td>
<td>15</td>
<td>100.62</td>
<td>11.68</td>
<td>27</td>
<td>1.746</td>
</tr>
</tbody>
</table>

Indicator N: Safe and Supportive Environment. In 2015 and 2016, no schools responded as beginning implementation of a safe and supportive environment. For 2015, the mean student achievements on the unified scaled score were 99.33 in the six schools that reported partial implementation category with a standard deviation of 14.11. The mean
student achievement on the unified scaled score for the nine schools that reported in the full implementation category was 96.86 with a standard deviation of 6.8. The mean student score for the 13 schools that reported sustained implementation category was 106.43 with a standard deviation of 12.66.

In 2016, the mean was 95.33 in the five schools that reported partial implementation category with a standard deviation of 10.16; the mean for the 10 schools that reported in the full implementation category was 97.26 in with a standard deviation of 9.42; and the mean for the 15 schools that reported sustained implementation category was 103.27 with a standard deviation of 10.94.

Table 17 contains the elements from the ANOVA test from 2015 and 2016 showing number of schools, mean score, and standard deviation for each category of implementation for Indicator N: Safe and Supportive Environment. None of the sampled schools had a beginning implementation response; therefore, that column was omitted from the table. None of the Indicator N findings were significant.

Table 17

*Findings of the ANOVA for Indicator N: Safe and Supportive Environment from 2015 and 2016*

<table>
<thead>
<tr>
<th>Variable</th>
<th>$N$</th>
<th>$M$</th>
<th>SD</th>
<th>$N$</th>
<th>$M$</th>
<th>SD</th>
<th>$N$</th>
<th>$M$</th>
<th>SD</th>
<th>df</th>
<th>$F$</th>
<th>$p$</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
<td>6</td>
<td>99.33</td>
<td>14.11</td>
<td>9</td>
<td>96.86</td>
<td>6.8</td>
<td>13</td>
<td>106.43</td>
<td>12.66</td>
<td>25</td>
<td>.036</td>
<td>.152</td>
</tr>
<tr>
<td>2016</td>
<td>5</td>
<td>95.33</td>
<td>10.16</td>
<td>10</td>
<td>97.26</td>
<td>9.42</td>
<td>15</td>
<td>103.27</td>
<td>10.94</td>
<td>27</td>
<td>.611</td>
<td>.218</td>
</tr>
</tbody>
</table>
**Indicator O: Shared Leadership for Learning.** In 2015 and 2016, no schools responded as beginning implementation of a shared leadership for learning. For 2015, the mean student achievements on the unified scaled score were 96.10 in the seven schools that reported partial implementation category with a standard deviation of 13.78. The mean score for the 11 schools that reported full implementation category was 100.8 with a standard deviation of 8.62. The mean score for the 10 schools that reported in the sustained implementation category was 106.98 with a standard deviation of 12.62.

In 2016, the mean was 97.46 in the seven schools that reported partial implementation category with a standard deviation of 9.06; the 11 schools that reported full implementation category was 96.56 with a standard deviation of 9.16; and a mean score of 104.49 was reported for the 12 schools that reported sustained implementation category with a standard deviation of 11.61. None of the Indicator O findings were significant.

Table 18 contains the elements from the ANOVA test from 2015 and 2016 showing number of schools, mean score, and standard deviation for each category of implementation for the Indicator O: Shared Leadership for Learning. None of the sampled schools had a beginning implementation response; therefore, that column was omitted from the table.
Table 18

Findings of the ANOVA for Indicator O: Shared Leadership for Learning from 2015 and 2016

<table>
<thead>
<tr>
<th>Variable</th>
<th>Partial</th>
<th>Full</th>
<th>Sustained</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>N</td>
<td>M</td>
</tr>
<tr>
<td>2015</td>
<td>7</td>
<td>96.10</td>
<td>13.78</td>
<td>11</td>
</tr>
<tr>
<td>2016</td>
<td>7</td>
<td>97.46</td>
<td>9.06</td>
<td>11</td>
</tr>
</tbody>
</table>

Indicator S: Collaborative Teams. In 2015 and 2016, no schools responded as beginning implementation of collaborative teams. For 2015, the mean student achievement on the unified scaled score were 98.89 for eight schools reporting in the partial implementation category with a standard deviation of 11.34. Thirteen school reported in the full implementation category with a mean of 97.47 and a standard deviation of 9.472. The seven schools reporting in the sustained implementation category showed a mean of 113.3 with a standard deviation of 10.088. The test yielded statistically significant results between the partial implementation and sustained implementation schools. The degrees of freedom was 25 and the F-value was 5.972.

In 2016, four schools reported means were 93.69 in the partial implementation category with a standard deviation of 11.95; 14 schools reported a mean of 96.86 in the full implementation category with a standard deviation of 7.65; and 12 schools reported a mean of 105.62 in the sustained implementation category with a standard deviation of 11.14.
Table 19 shows the elements from the ANOVA test from 2015 and 2016 showing number of schools, mean score, and standard deviation for each category of implementation for the Indicator S: Collaborative Teams. None of the sampled schools had a beginning implementation response; therefore, that column was omitted from the table.

Table 19

*Findings of the ANOVA for Indicator S: Collaborative Teams 2015 and 2016*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Partial</th>
<th>Full</th>
<th>Sustained</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>M</td>
<td>SD</td>
<td>N</td>
</tr>
<tr>
<td>2015</td>
<td>8</td>
<td>98.89</td>
<td>11.340</td>
<td>13</td>
</tr>
<tr>
<td>2016</td>
<td>4</td>
<td>93.69</td>
<td>11.951</td>
<td>14</td>
</tr>
</tbody>
</table>

*Statistically significant at the p < .05 level

Following the ANOVA, due to the statistically significant finding, a Levene test and Tukey HSD (honest significant difference) post-hoc test was conducted. The Levene test of homogeneity of variance was used to verify the assumption that the variance of the dependent variables is not equal across groups; therefore, we can assume the variances are not homogeneous. Table 20 demonstrates that there is no significant relationship (p=.820) between the variances of partial, full, and sustain groups.

Table 20

*Post Hoc Levene Test for Indicator S*

<table>
<thead>
<tr>
<th>Levene Statistic</th>
<th>df1</th>
<th>df2</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>.200</td>
<td>2</td>
<td>25</td>
<td>.820</td>
</tr>
</tbody>
</table>
The Tukey test determines which specific groups in the sample have significant differences. The test yielded a statistically significant difference between sustained implementation and partial and full implementation school achievement means. The Tukey post-hoc test revealed a statistically significant 15.82 difference in mean score between the full implementation and sustained implementation ($p = .008$) and a statistically significant 14.40 difference in the means between partial and sustained implementation ($p = .029$). Even though a significance level of .042 was found, no significant findings for Indicator S were found by the post hoc Tukey test with the lowest significance level at .075 between full and sustained implementation (see Table 21).

Table 21

*HSD Post Hoc Test for implementation categories in the Indicator S: Collaborative Teams*

<table>
<thead>
<tr>
<th>Category</th>
<th>2015</th>
<th>2015</th>
<th>Mean Difference</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>4</td>
<td>1.42324</td>
<td>.948</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-14.40149**</td>
<td>.029</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>4</td>
<td>-1.42324</td>
<td>.948</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>-15.82473**</td>
<td>.008</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>3</td>
<td>14.40149**</td>
<td>.029</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>15.82473**</td>
<td>.008</td>
</tr>
</tbody>
</table>

*Category codes: 2=partial; 3=full; 4=sustained*

** = Statistically significant at the $p < .05$ level [Is this accurate?]
Figure 23 shows the 2015 SPSS means plot of the one way ANOVA between implementation code on the X axis, and the schools’ mean unified scaled score mean on the Y axis for Indicator S.

Figure 23. 2015 SPSS means plot of the one way ANOVA between school Indicator S, X axis, and school’s mean unified scaled score mean, Y axis.

**Indicator T: Collective Responsibility.** In 2015, only one school (School O) self-identified as beginning implementation of collective responsibility; their unified scaled mean score was 113.97. That school was removed when it was found that post hoc tested needed to be done due to significant findings. For 2015, the mean student achievements on the unified scaled score were 96.77; 14 schools reported partial implementation with a standard deviation of 9.82. Seven schools reported a mean of 96.92 in the full implementation category with a standard deviation of 6.66, and six schools reported in the sustained implementation category with a mean of 117.37 and a standard deviation of 6.02. The degrees of freedom was 26 and the F-value was 13.909. Due to the significance level of .000,
a post-hoc testing was run.

In 2016, no schools responded as beginning implementation of collective responsibility. Nine schools reported means of 96.0 in the partial implementation category, with a standard deviation of 7.81; 11 schools reported a 99.95 mean in the full implementation category, with a standard deviation of 12.37; and 10 schools reported a mean of 103.22 in the sustained implementation category, with a standard deviation of 11. In 2016, Indicator T findings were not significant.

Table 22 contains the elements from the ANOVA test from 2015 and 2016 showing number of schools, mean score, and standard deviation for each category of implementation for the Indicator T, Collective Responsibility. Only one of the sampled schools had a beginning implementation response; therefore, that column was omitted from the table.

Table 2

| Findings of the ANOVA for Indicator T: Collective Responsibility for 2015 and 2016 |
|-------------------------------|---|---|---|---|---|---|---|---|---|---|
| Variable                      | 2015 |  | 2016 |  |  |  |  |  |  |  |
| Partial                      | 14   | 96.77 | 9.82 | 7   | 96.92 | 6.66 | 6   | 117.36 | 6.02 | 24 | 13.909 | .000** |
| Full                      | 9    | 96.0  | 7.81 | 11  | 99.95 | 12.37 | 9    | 103.22 | 11   | 27 | .812 | .454 |
| Sustained                  | 11   | 103.22 | 11   | 27  | .812 | .454 |
| ANOVA                      | 27   | .812 | .454 |

**Statistically significant at the p < .001 level

Following the ANOVA, the Levene test of homogeneity of variance was used to verify that assumption that the variance of the dependent variables is not equal across groups. The Levene test yielded no significant findings (p=.420); therefore, we can assume the dependent variables variances are not homogeneous. (see Table 23).
Due to the statistically significant finding, a Tukey HSD post-hoc test was conducted. Table 23 shows that the Tukey HSD post hoc test yielded a statistically significant difference of 20.60 between the mean unified scaled scores of the partial implementation to schools and those that reported sustain implementation ($p < .000$). The test also found a statistically significant difference in the mean of 20.45 between the schools that reported full and sustained implementation school achievement means ($p < .001$).

Table 24

*HSD Post Hoc Test for implementation categories in the Indicator T.*

<table>
<thead>
<tr>
<th>2015</th>
<th>2015</th>
<th>Mean Difference</th>
<th>Significance.</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>3</td>
<td>-.15595</td>
<td>.999</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>-20.60119**</td>
<td>.000</td>
</tr>
<tr>
<td>3</td>
<td>2</td>
<td>-.15595</td>
<td>.999</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>-20.44524**</td>
<td>.001</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>20.60119**</td>
<td>.000</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>20.44524**</td>
<td>.001</td>
</tr>
</tbody>
</table>
Figure 24 shows the 2015 SPSS means plot of the one way ANOVA between school implementation code on the X axis, and school’s mean unified scaled score mean on the Y axis for Indicator T.

![Graph showing the 2015 means plot of the one way ANOVA between school implementation code and school's mean unified scaled score mean for Indicator T.]

*Figure 24.* 2015 Means plot of the one way ANOVA between school implementation code and school’s mean unified scaled score mean for Indicator T.

**Analysis of data for research question 2.** Does any indicator on the School Systems Review correlate with overall levels of school achievement on the state’s elementary reading assessment?

In 2015 data, Indicator S: Collaborative Teams yielded a higher and statistically significant difference of 15.82 ($p = .008$) between the full implementation and sustained implementation school achievement means and a statistically significant 14.40 difference in the means between partial and sustained implementation ($p = .029$). For Indicator T: Collective Responsibility, the one-way ANOVA test yielded a higher and statistically
significant 20.60 difference between the student achievement means of the partial implementation to schools that reported sustain implementation ($p < .000$). The test also found a statistically significant difference in the mean unified scaled score of 20.45 between the schools that reported full implementation and sustained implementation school achievement means ($p < .001$). The hypothesis of a statistically significant relationship between Indicators S and T and student achievement was accepted.

**Research Question 3.**

**Q3.** Are higher levels of academic achievement in reading related to the variance of self-reported school culture assessment scores?

**H3.** There is a relationship between higher levels of academic achievement in reading and the two-year variance of self-reported school culture scores.

Using two years of self-reported school culture indicators and the variance between those scores and the student test scores on the reading assessment, the data were tested to determine if the change in cultural inventory outcomes between year one and year two had any relationship to the level of reading achievement on the state reading assessment. An analysis of covariance (ANCOVA) was used to test the relationship between the changes in scores on the school culture inventory while controlling for the change on the state reading assessment.

A new student growth categorical variable was created. Schools that had positive growth in student achievement scores as measured by the unified scaled score means between 2015 and 2016 were categorized as 2, and schools that experienced a decline in student achievement scores were labeled as 1. None of the schools in the study had overall student achievement scores that were unchanged.
A first test was performed in SPSS to determine if the 2016 school culture mean and the student growth categorical variable did not violate the assumption of homogeneity of regressions ($F [3.047] = .439, p = .094$) between the student growth categorical variable and the 2015 school culture mean. Next, the ANCOVA was performed in SPSS. The 2016 school culture mean and the student growth categorical variable did not violate the assumption of equality of variance between our groups with the Levene’s test of equality ($F [2.905], p = .100$).

Figure 25 shows the 2015 school culture mean on the X axis, and the 2016 school culture mean on the Y axis. The two lines represent the no growth (1) and growth (2) student achievement categorical variables.

![Figure 25. SPSS means plot of the 2016 school culture mean, X axis, and 2015 school culture mean, Y axis.](image)

Table 25 shows the 2015 and 2016 school culture means by student growth categorical variable. In 2015, schools with no achievement growth had a mean of 2.94,
whereas schools with student achievement growth had a mean of 3.18. In 2016, schools with no achievement growth had a mean of 3.25 and schools with student achievement growth had a mean of 3.22.

Table 25

2015 and 2016 School Culture Means by Student Growth Categorical Variable

<table>
<thead>
<tr>
<th>Student Growth</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
</tr>
<tr>
<td>No</td>
<td>16</td>
<td>2.94</td>
</tr>
<tr>
<td>Yes</td>
<td>12</td>
<td>3.18</td>
</tr>
<tr>
<td>Total</td>
<td>28</td>
<td>3.04</td>
</tr>
</tbody>
</table>

The ANCOVA test did identify that the covariate, 2015 school culture mean, did have a statistically significant relationship to the 2016 school culture mean (F [53.833], p = .000) with the ability to predict the outcome 68% of the time. Schools that experienced student growth did not have a higher school culture mean, and the results were not statistically significant (F [.542], p = .074) when analyzing whether higher achievement scores impacted school culture outcomes (see Table 26).
Table 26

Analysis of Covariance (ANCOVA) Between the Changes in Scores on the School culture Inventory While Controlling for the Change on the State Reading Assessment.

<table>
<thead>
<tr>
<th>Source</th>
<th>Type III Sum of Squares</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>Sig.</th>
<th>Partial Eta Squared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Corrected Model</td>
<td>8.424a</td>
<td>2</td>
<td>4.212</td>
<td>27.002</td>
<td>.000</td>
<td>.684</td>
</tr>
<tr>
<td>Intercept</td>
<td>.386</td>
<td>1</td>
<td>.386</td>
<td>2.472</td>
<td>.128</td>
<td>.090</td>
</tr>
<tr>
<td>School culture 2015</td>
<td>8.398</td>
<td>1</td>
<td>8.398</td>
<td>53.833</td>
<td>.000</td>
<td>.683</td>
</tr>
<tr>
<td>Student Growth</td>
<td>.542</td>
<td>1</td>
<td>.542</td>
<td>.542</td>
<td>.074</td>
<td>.122</td>
</tr>
<tr>
<td>Error</td>
<td>3.9</td>
<td>25</td>
<td>.156</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>305.48</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected Total</td>
<td>12.324</td>
<td>27</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. R Squared = .684 (Adjusted R Squared = .658)

Analysis of data for Research Question 3. Are higher levels of academic achievement in reading related to the variance of self-reported school culture assessment scores?

The ANCOVA test found that there was no statistically significant relationship between rising reading achievement scores and self-reported school culture. Schools that experienced student growth didn’t have a higher school culture mean, nor were the results statistically significant. The hypothesis of a relationship between self-reported school culture assessment scores and student achievement in reading is rejected.
Conclusion

Data presented in this chapter comprised responses of schools’ self-reported levels of implementation of school culture indicators and academic achievement levels for reading in Grades 3, 4, and 5 in randomly chosen schools in three southeastern Michigan counties. Analysis of findings showed a significant positive relationship between self-reported school culture scores and the level of school achievement on Michigan’s elementary reading assessment. Further, findings indicated a relationship between indicators on the School Systems Review and school achievement on the state’s elementary reading assessment.

However, no statistically significant relationship was found between reading achievement scores and self-reported school culture. Schools that experienced student growth didn’t have a higher school culture mean, nor were the results statistically significant. A summary of findings are included in Chapter 5 along with implications of the findings for current practice and recommendations for future studies of school culture and student achievement.
Chapter 5: Conclusions, Implications and Recommendations, & Future Studies

A Review of the Study

The State of Michigan’s mandated School Systems Review (SSR), a new annual diagnostic for the state’s public schools, comprised inventories that included components of school culture. The goal of this quantitative study was to examine the relationship between self-reported school culture and student achievement in 2015 and 2016. The data in this study were collected from self-reported implementation scores on specific indicators of school culture by randomly selected schools in three counties in southeast Michigan and M-Step mandated reading assessment scores of students in elementary Grades 3 through 5.

Pearson’s tests of correlations were conducted to identify relationships, if any, between scaled scores of school culture and their students’ scaled scores on the reading assessment. Considering 2 years of data, the relationship between specific indicators of school culture and scaled levels of student achievement were subjected to a one-way analysis of variance (ANOVA) to test the relationship between the changing of scores on the school culture inventory while controlling for the change on the state reading assessment. Finally, an analysis of covariance (ANCOVA) was used to test whether a relationship existed between success of students on the assessment and school culture.

This chapter includes a summary of the problem, methods, and findings. Conclusions were formulated from the analysis of the data, application of the findings, and recommendations for future research the topic of school culture, quantitative analysis of school culture, and applications of this research at local and state level.

Statement of the problem. The aims of the school improvement process are improved teaching, learning, and student test performance. Stolp (1994), Nichols, Glass,
Berliner (2006), and Muhammad (2009, 2015) confirmed that for the last 15 years, schools have been under legislative pressure to increase student performance in math and reading. This performance is gauged by gains and proficiency levels on standardized tests according to the No Child Left Behind Act (NCLB, 2002). Due to the increase in accountability following NCLB, teaching to the test and fashionable academic initiatives for obtaining higher test scores have been instituted with uneven results (Warren Institute, 2007; Le Floch, Taylor, & Thomsen, 2006).

Deal and Peterson (1999), Muhammad (2009), and Sergiovanni (2000) noted that in the search for real academic growth, the cultivation of healthy school cultures has been identified as a tactic to improve students’ academic results. In 2015, the State of Michigan deployed a new self-reporting school culture inventory as part of each school's annual reporting (Zdeb, 2015). Researchers such as Stolp (1994) have compiled extensive evidence on school culture’s strong correlation with increased student achievement. The school-level, self-reported analysis of school culture has become a mandatory element of the school improvement process in the State of Michigan (Zdeb, 2015).

Conclusions

Within the parameters of the study, findings led to conclusions about the relationship of school culture and student achievement. Three research questions guided the inquiry.

Research Question 1. Do higher self-reported school culture scores on the State of Michigan’s diagnostics correlate with higher overall levels of school achievement on the state’s elementary reading assessment?

Conclusion 1. A significant positive correlation was found between school culture and student achievement.
Analysis of all of the indicators of school culture in the School Systems Review (SSR) and state-required reading assessment scores in grades 3 through 5 in participant schools confirmed that healthier school cultures, as identified through Michigan school culture indicators, have a significant positive relationship to student achievement.

Considering 2015 and 2016 independently, Pearson’s correlations test for a relationship between all of the educational institutions’ self-reported school culture scores and their average scaled scores on the reading assessment confirmed a significant relationship between the 2015 SSR mean score and the 2015 unified scaled score. The correlation score of 0.424 was identified with a significance of 0.024.

For 2016, the correlation score dropped to 0.333, and the findings were no longer significant (p = .072). This outcome raised additional questions about the second year of testing and the second year of self-reflection on the school culture inventory.

Like the schools in the study and according to mischooldata.com, the test scores of all Michigan’s students dropped between the first year of the assessment and the second. Table 26 shows the 2015 and 2016 comparison of unified scaled score between all students in the study and all students in the State of Michigan.

Table 27

Comparison of MStep Reading Assessment Scores Between Students in Study Participant Schools and All Michigan Students By Year

<table>
<thead>
<tr>
<th></th>
<th>2015</th>
<th>2016</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Students’ Scaled Mean</td>
<td>101.68</td>
<td>99.94</td>
<td>1.74</td>
</tr>
<tr>
<td>All Michigan Students’ Scaled Mean</td>
<td>94.5</td>
<td>93.9</td>
<td>.6</td>
</tr>
</tbody>
</table>
For participant schools, the opposite tendency existed for school culture scores; those scores increased from 2015 to 2016. Wagner (2006) noted research that found that when teachers and administrators know that they are going to be given scores on cultural assessments; it can skew their responses. This phenomenon may have affected the scores in 2016.

In 2015, the initial year that schools were required to complete the SSR, they were unaware that a quantitative score would be issued at the end of the assessment; additionally, it was impossible to see the actual outcomes until after the report was completed. The schools participating in the study had a mean of 3.05 in the first year. As reported by Stolp (1994), Nichols, Glass, and Berliner (2006), and Muhammad (2009, 2015), schools are under constant pressure to improve. In the second year of the mandated SSR, schools knew their answers would be scored. In the study participants, the mean school culture score grew to 3.23 (see Table 7, in Chapter 4). Furthermore, 11 schools recorded a higher mean on the five indicators, and 15 schools recorded the same mean. Only schools, sites Q, Y, and AA, of the 30 in the study with recorded SSR scores both years had a lower school culture mean from the five indicators. The histograms of data between 2015 and 2016, which in 2015 is skewed left, becomes more dramatically skewed left in 2016 (see Figures 18 and 19 in Chapter 4).

Even though findings become less clear in 2016, data from the initial year of the study and the achievement outcome since 2015 suggested that when a healthy culture was in place, student achievement was higher—a positive relationship was found between the mean score from the five school culture-related indicators on the State of Michigan School Systems Review and student achievement. This conclusion is consistent with Sergiovanni (2000) who stated, “We still have to worry about standards, the curriculum, teacher development, tests,
resources, and the creation of appropriate management designs that help get things done, but these concerns will not matter much unless the right culture is in place” (p. 1). The State of Michigan demonstrates best practice in the mandated accounting for school culture to help develop higher levels of student learning.

**Research Question 2.** Does any indicator on the School Systems Review correlate with overall levels of school achievement on the state’s elementary reading assessment?

**Conclusion 2.** Analysis of the data showed significant positive relationships between the school culture indicator of collaborative teams and student achievement and the school culture indicator of collective responsibility and student achievement.

A one-way analysis of variance (ANOVA) was used to test the relationship between the school culture indicators E–Learning Environment, N–Safe and Supportive Environment, O–Shared Leadership for Learning; S–Collaborative Teams, and T–Collective Responsibility were all tested with scaled scores of student achievement.

Indicators E, N, and O showed no significant findings. In 2015, Indicators S and T both had statistically significant positive relationships to higher levels of student achievement. In 2016, no significant relationship were found between student achievement and any of the school culture indicators. An explanation about the changing means should be clarified:

The mean for Indicator S, Sustained Implementation moved from 113.3 mean and 10.09 SD in 2015 (N=7) to 105.62 mean and a 11.14 SD in 2016 (N = 12). The change occurred because an additional five schools that moved into the 2016 sustained implementation from the 2015 full implementation. The mean student achievement score for schools that moved to sustain implementation was 99.61, which joined the seven schools that
remain in sustained implementation with a 109.91 student achievement mean score.

Additionally, but not related to the change in mean for Sustained Implementation, two schools that did not use the SSR in 2015 identified as full implementation in 2016. The mean for those two schools was 100.79. Four schools left the 2015 Partial Implementation to report in the 2016 Full Implementation. Those schools had a mean of 97.52, and the school that remained in partial had a 98.89 mean student achievement score. This is illustrated in Table 28.

Table 28

*Comparison of Indicator S: Collaborative Teams Movement of Implementation Levels Between 2015 and 2016*

<table>
<thead>
<tr>
<th></th>
<th>2015 Not Recorded</th>
<th>2016 Partial</th>
<th>2016 Full</th>
<th>2016 Sustained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>Mean</td>
<td>N</td>
</tr>
<tr>
<td>2015 Not Recorded</td>
<td>0</td>
<td>0</td>
<td>2</td>
<td>100.79</td>
</tr>
<tr>
<td>2015 Partial</td>
<td>8</td>
<td>4</td>
<td>93.69</td>
<td>4</td>
</tr>
<tr>
<td>2015 Full</td>
<td>13</td>
<td>0</td>
<td>8</td>
<td>95.56</td>
</tr>
<tr>
<td>2015 Sustained</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>NA</td>
</tr>
</tbody>
</table>

The mean for Indicator T: sustained implementation moved from 117.36 mean and 6.023 SD in 2015 ($N = 6$) to 103.36 mean and a 10.999 SD in 2016 ($N = 9$). Movement of the school sites was seen in any of the different implementation levels. Two schools that did not use the SSR in 2015 identified as full implementation in 2016; the mean for those two schools was 100.79. The one school site that identified as beginning implementation was removed in order to run the 2015 analysis due to being the inability to run the ANOVA test.
with only one data point in that section. In 2016, that school moved to Partial Implementation and was used in the analysis.

Additionally, of the fourteen schools that reported partial implementation in 2015, eight continued to report partial implementation in 2016 with a student achievement mean of 95.44; four moved to full implementation with an achievement mean of 93.78, and one of the school moved to sustained implementation with a score of 96.63.

Of the six schools that reported full implementation in 2015, two remained in full implementation with a mean of 95.31, and four moved to sustained implementation with a mean of 94.69. Finally, of the seven schools that identified as sustained implementation in 2015, three school reduced their level to full implementation with a mean of 118.4, and four school remained in the sustained implementation group with a mean of 113.39. The movement and means of school that moved to different levels of implementation is shown in Table 29.

Table 29

*Comparison of Indicator T: Collective Responsibility Movement of Implementation Levels Between 2015 and 2016*

<table>
<thead>
<tr>
<th></th>
<th>2015 Not Recorded</th>
<th>2016 Partial</th>
<th>2016 Full</th>
<th>2016 Sustained</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>N</td>
<td>Mean</td>
<td>N</td>
</tr>
<tr>
<td>2015 Not Recorded</td>
<td>0</td>
<td>0</td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2015 Beginning</td>
<td>1</td>
<td>1</td>
<td>111</td>
<td></td>
</tr>
<tr>
<td>2015 Partial</td>
<td>14</td>
<td>8</td>
<td>95.44</td>
<td>4</td>
</tr>
<tr>
<td>2015 Full</td>
<td>6</td>
<td>2</td>
<td>95.31</td>
<td>4</td>
</tr>
<tr>
<td>2015 Sustained</td>
<td>7</td>
<td>3</td>
<td>118.4</td>
<td>4</td>
</tr>
</tbody>
</table>


**Research Question 3.** Are higher levels of academic achievement in reading related to the variance of self-reported school culture assessment scores?

**Conclusion 3.** In this study, no significant findings were found to relate higher achievement in reading at the selected elementary grade levels and the variance of self-reported school culture assessment scores.

According to Anderman (1991), school culture inventory outcomes have been found to have a high correlation to the staff’s feelings of accomplishment, recognition, and affiliation; thus, this research question attempted to find if there was a relationship between schools that were more successful on the achievement test and those with higher culture. It was a way to test to see if higher or improved test scores were impacting building culture instead of the culture impacting the test scores. It was of interest to test whether culture impacted test scores or whether test scores impacted culture.

Using two years of self-reported school culture indicators and the variance between those scores and the student test scores on the reading assessment, data were tested to determine whether the change in cultural inventory outcomes between year one and year two had any relationship to the level of reading achievement on the state assessment. There were no significant findings for this question.

**Implications and Recommendations**

**State of Michigan’s School Systems Review (SSR).** Fullan (2001) believed school culture was the key to success. Understanding the current school culture research could help leaders work with culture more effectively. This study found significant relationships between elements of the SSR diagnostic and student achievement, which suggests that the SSR is an effective tool to identify school culture. The use of the findings can help schools
develop healthy school cultures. Unfortunately, the significant findings of this study were exclusive to the initial year the diagnostic used.

Currently, the SSR is due once annually. Given the outcomes in the second year of the diagnostic, it might be prudent to either remove the numerical values in the report given to schools to help minimize the impact of school attempting to show higher scores or growth. The State of Michigan should consider changing the scale of the inventory to allow for greater differentiation of building scores and also the different cultural elements of the diagnostic. Additionally, according to an important assumption of this study, the self-administered inventories were completed by employees of each particular school. In the future, the state should move to assure greater fidelity in the completion of the SSR. The state should add an authentication process that both outlines the expectations for how to complete the diagnostic or create a survey form for all staff of a particular school to complete. Additional training for all schools could assist in the inventories being completed with greater accuracy.

With the difficulties of the SSR stated, the data showed that the tool can be valid for relating school culture and student achievement. This should be highlighted by the state and more focus given to these scores. There is no protocol for use of these data. Currently, the State of Michigan does not report these scores to the public; only individual schools, central offices, and intermediate school districts have access. The sharing of this data as individual schools, districts, county, and state in a professional format could provide great insight into what can and needs to be done to improve school culture. The state could develop an entire conference or workshop to share the data with school improvement teams, and work could be done collaboratively to help identify and support the school culture elements within a school
and district. Possibly of greatest importance, the data could be used by each ISD, district, and individual schools to reflect on the socialization process of the new staff each year.

**Collaborative teams and collective responsibility.** Two indicators of school culture on the SSR diagnostic were found to be predictors of student achievement. This study found schools that reported higher levels of collaborative teams and collective responsibility had statistically significant relationships to student achievement. New staff members should be trained to know the cultural situation in their school related to those SSR elements and have a clear and focused understanding of a district’s expectations related to all elements of school culture.

It is important to highlight that the SSR and Michigan’s School Improvement Framework 2.0 have the indicators S–Collaborative Teams and T–Collective Responsibility together under Strand 3, Standard 7: Professional Learning Culture. (see Figure 5 in Chapter 2).

The indicator of S–collaborative teams includes the following characteristics: (a) a collaborative culture exists in which instructional staff supports each other through feedback and coaching to implement new learning to increase student achievement, (b) structures and systems are in place for collaborative planning time for learning teams, (c) teams utilize protocols and collaboration time effectively, and (d) instructional staff collaborates regularly to analyze student data to inform instruction and adjust delivery to better meet student needs. DuFour et al. (2006) confirmed that each of these characteristics strongly connects with the concepts of collaboration associated with a professional learning community.

According to Lee and Loeb (2000), Lee and Smith (1996), and Goddard, LoGerfo, and Hoy (2004), the indicator of T–collective responsibility is a school norm, a main element
of culture, and is closely connected to student achievement. This indicator encompasses the following elements: (a) instructional staff teams and individuals take active roles in creating and leading professional learning, (b) instructional staff hold one another accountable for implementing what is learned from professional learning, and (c) instructional staff hold one another accountable for the improved student performance that should result from the implementation of professional learning.

Further statistical analysis on the relationship of Indicators S and T with student achievement showed that when Indicators S and T were unified into one mean score and compared to the unified scale score for student achievement, another positive relationship emerged. In 2015, the correlation score of 0.514 was identified with a significance of 0.005 using and SPSS Pearson correlation. In 2016, the relationship was not found to be significant, but as discussed earlier in the chapter, the second year of the school culture inventory might not have the validity of the first year due to the knowledge of scoring that would occur. Of interest, however, when the initial 2015 indicator mean from S and T was compared to the 2016 unified scale score, the relationship strengthened; the correlation score of 0.570 was identified with a significance of 0.002 using and SPSS Pearson correlation.

Schools that identified with higher levels of school culture in 2015 appeared to have a stronger relationship to higher levels of student achievement in 2016. Muhammad (2009) and Deal and Peterson (2009) concurred that when teams with a focus on collective responsibility work collaboratively as part of a healthy school culture, they seek out the knowledge needed to ensure that every student learns. Furthermore, Williamson and Blackburn (2009) stated that school leaders “need to understand the power of these (school culture) symbols to telegraph messages about what is important” (p. 9). This study highlights collaborative teams
and collective responsibility as two of those highly important key symbols schools need to communicate.

As stated by Bolman and Deal (2008), given that new members of the organization “may work, but never only on their official assignments” (p. 166), districts should motivate the new teachers to focus especially on collaborative teams and collective responsibility. Schein (2010) added that new members to a group are initially impacted by the routine, so time for focus on the SSR elements of collaborative teams and discussion of collective need to be added to the professional development calendar.

**Qualitative or ethnographic research and analysis of school culture.** Although Anderman (1991) reported that school culture inventory outcomes have been found to have a high correlation to the staff’s feelings of accomplishment, recognition, and affiliation, that conclusion was not borne out in this study. However, Maslowski (2006) offered a suggestion that might be considered in the next steps of the State of Michigan’s study of school culture: That researchers use multiple tools and triangulate data with qualitative methods of research. The state and federal policymakers should use the data from the SSR to continue to develop further investigation into school culture. School culture coaches from the state or ISD level could use the SSR data as a starting point for qualitative or ethnographic analysis of school culture to report out and assist schools in developing healthy school cultures.

Data from the SSR could be used by policy-makers for developing healthy cultures and for training leadership and school improvement teams. Policy-makers could use the outcomes of the present study to highlight the value of the SSR’s cultural elements. Adding funding and adjusting time requirements for staff collaborative and professional development
focused on collective responsibility could also seem to be prudent given the outcomes in the study.

**Recommendations for Future Study**

1. The researcher suggests replication of this study including years of school culture and student achievement data, especially after multiple years of implementation school culture diagnostic reports and student achievement assessments.

2. The data for all schools that use the SSR is housed at a state level. It could be beneficial to increase the sample size or even include the entire population of schools in the state.

3. Replication of this research could use a different measure of student achievement, such as a normed assessment or student report card markings. The possibility to triangulation of student achievement scores, using multiple measures to create a composite score, could give a more accurate picture of a school’s student achievement.

4. This study focused on elementary test scores; a replication using middle school assessments or end of high school assessments and SSR scores could contribute to a larger understanding of the cultural elements of the SSR and student achievement especially at the secondary level.

5. Noting the significant relationship between Indicators S and T, research in other states could test Michigan’s SSR indicators for a relationship between school culture and student achievement.

6. Peterson (2002) and Muhammad (2009) reported that healthy school cultures seek out the tools needed to help improve student achievement. Future school culture studies that gathered data related to the curriculum used could further validate the outcomes of this
research. Exploring relationships between school culture, achievement level, and curriculum tools could be of great benefit to the educational community.

7. The present research focused on mean student achievement from an entire population of a school. Within that mean, subgroups of students were not addressed. The data collected for this study included variables such as gender, economically disadvantaged, English Language Learners and special education students but these demographics were not used in the analysis of data. Future research using these data sets could include a study of the relationships among SSR’s cultural elements, the subgroups, and student achievement. Additionally, future research could study school culture and the standard deviation of student achievement scores could yield valuable information on overall consistency of academic programming within a school.

8. Future research on school culture could help to validate the SSR as a measure for school culture. It would be beneficial to survey schools about how they completed the SSR diagnostic in an attempt to validate the SSR tool. A future researcher could also perform an analysis of the SSR school culture outcomes and data relating to the other school culture inventories such as the Instructional Climate Inventory: Form T (ICI-T), School Cultural Elements Questionnaire (SCEQ), School Characteristics Inventory (SCI), and the Organizational Climate Description Questionnaire (OCDQ).

9. Denison and Spreitzer (1991) noted the debate on the best way to study culture. Thus, future research could use the data from the Michigan SSR report and develop a qualitative study to seek a relationship between culturally focused indicators of the SSR and the artifacts, espoused values, and the basic underlying assumptions of a school.
Conclusion

Bolman and Deal (2008) said that schools must help all students achieve. Leaders who understand the elements of culture and their impact on an organization can be very effective, and the cultural elements of the Michigan SSR can help school leaders work on developing a healthy school culture. School leaders can break away from the Jeffersonian culture that has shaped and continues in schools. Culture has an important impact on school reform initiatives, as confirmed by Deal and Peterson (2009) and Muhammad (2009), but culture is the necessary reform. If schools can change their organizational culture, especially by focusing on collaboration and collective responsibility, they can raise student achievement. Michigan’s SSR tool can help leaders with this task.
References


Whiston, B. (2016, June 8). *MDE memo: Quarterly report to the legislature on deficit districts* Retrieved from


http://mymassp.com/content/mde_memo_accountability_accreditation_schooldistrict_reporting_requirements
# Appendix: University Human Subjects Review Committee Approval

## RESEARCH @ EMU

<table>
<thead>
<tr>
<th>UHSRC Determination:</th>
<th>EXEMPT</th>
</tr>
</thead>
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<td>DATE:</td>
<td>November 8, 2016</td>
</tr>
</tbody>
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| TO:                  | Alexander McNeece  
Eastern Michigan University |
| Re:                  | UHSRC: # 878852-1  
Category: Exempt category 4  
Approval Date: November 8, 2016 |
| Title:               | Michigan’s Quantitative School Culture Inventories and Student Achievement |

Your research project, entitled *Michigan’s Quantitative School Culture Inventories and Student Achievement*, has been determined *Exempt* in accordance with federal regulation 45 CFR 46.102. UHSRC policy states that you, as the Principal Investigator, are responsible for protecting the rights and welfare of your research subjects and conducting your research as described in your protocol.

**Renewals:** Exempt protocols do not need to be renewed. When the project is completed, please submit the [Human Subjects Study Completion Form](http://irbnet.org) (access through IRBNet on the UHSRC website).

**Modifications:** You may make minor changes (e.g., study staff changes, sample size changes, contact information changes, etc.) without submitting for review. However, if you plan to make changes that alter study design or any study instruments, you must submit a Human Subjects Approval Request Form and obtain approval prior to implementation. The form is available through IRBNet on the UHSRC website.

**Problems:** All major deviations from the reviewed protocol, unanticipated problems, adverse events, subject complaints, or other problems that may increase the risk to human subjects or change the category of review must be reported to the UHSRC via an [Event Report](http://irbnet.org) form, available through IRBNet on the UHSRC website.

**Follow-up:** If your Exempt project is not completed and closed after three years, the UHSRC office will contact you regarding the status of the project.

Please use the UHSRC number listed above on any forms submitted that relate to this project, or on any correspondence with the UHSRC office.

Good luck in your research. If we can be of further assistance, please contact us at 734-487-3090 or via e-mail at human.subjects@emich.edu. Thank you for your cooperation.

Sincerely,

Jennifer Keallman-Fritz, PhD  
Chair  
University Human Subjects Review Committee